

# *Opuscula Philolichenum*

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Editor:

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The editor also extends his thanks those who provided peer review for the papers published in this volume: J. Bennett, R. Dirig, T.L. Esslinger, R.C. Harris, K. Knudsen, R. Lücking, P. May, G. Moore, E. Sérusiaux, L.B. Sparrius, and C.M. Wetmore.



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# Contributions to the Lichen Flora of Pennsylvania: A Checklist of Lichens Collected During the First Howard Crum Bryological Workshop, Delaware Water Gap National Recreation Area

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**ABSTRACT.** – A checklist of 209 species of lichens and lichenicolous fungi collected during the First Howard Crum Bryological Workshop in the Delaware Water Gap National Recreation Area, Pennsylvania, USA is provided. The new species *Opegrapha bicolor* R.C. Harris & Lendemer, collected during the Foray, is described. *Chrysothrix flavovirens* Tønsberg and *Merismatium peregrinum* (Flotow) Triebel are reported as new to North America.

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On April 23-26, 2004, we were graciously allowed to be commensals during the First Howard Crum Bryological Workshop in the Delaware Water Gap National Recreation Area, Pennsylvania, USA. Given the dearth of knowledge of lichen distributions in Pennsylvania and the overall lack of recent vouchers, this was a valuable opportunity to collect in what turned out to be a rich and interesting area.

We were quite surprised by the apparent high lichen diversity, as well as the number of novelties and rarities, in an area so close to the East Coast megalopolis. In four half-days in the field, we collected 209 species in a limited area of the Pennsylvania part of the Park. Some are clearly new to science of which, *Opegrapha bicolor* is described here (see Endnote). Two presumably undescribed species of *Fellhanera* will be published elsewhere, and the *Halecania* will be included in a forthcoming treatment of Ozark lichens. Others are left for the future, as present material (and our knowledge) are inadequate. *Chrysothrix flavovirens* and *Merismatium peregrinum* have not previously been reported from North America. Additional notable finds include *Arthonia apatetica*, *Gyalidea* sp., *Lecanora perplexa*, *Physcia pseudospeciosa*, *Pseudosagedia chlorotica* and *Rimularia badioatra*.

Wetmore (1987) surveyed the Delaware Water Gap National Recreation Area for lichens in 1986. He found 184 species collected from a much wider variety of habitats in both New Jersey and Pennsylvania. The amount of overlap with our list is rather small. A very rough tabulation of records for the Park gives a total of ca. 300 lichen species more or less reliably reported for the Water Gap over the last 30 years. Additional intensive collecting would likely add significantly to this number. A re-survey of the park in 2006, 20 years after Wetmore's study, would seem appropriate.

We are especially grateful to Mary Lincoln (Workshop organizer) and Bill Olson (who coordinated field trips and permits) for their kindness.

## CHECKLIST

A list of the lichens collected during the Foray by the following is provided: W.R. Buck (NY), R.C. Harris (NY), J.C. Lendemer (hb. Lendemer, with duplicates in NY). The list is arranged chronologically by the localities visited, with an alphabetically arranged species list for each. In the interest of providing the Park with as an complete inventory as possible, we have included specimens that could

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only be partially determined, as well as sterile sorediate crusts for which no names are presently known (these are placed at the end of the list for each locality). It should be noted that the numbers following undetermined species (i.e. *Lepraria* sp. 2) that occur throughout the checklist are intended to provide a reference for material that we consider to constitute a single taxon. Commentary and brief descriptions are provided when necessary. Lichenicolous fungi are indicated by an asterisk (\*) and identity of the host lichen is also provided.

**1. UNITED STATES OF AMERICA. PENNSYLVANIA. PIKE COUNTY.:** Northern hardwood forest (*Quercus*, *Acer*, *Fraxinus*) dominated by hemlock (*Tsuga*) on steep slopes along several small streams, Childs Recreation Area, ca. 2.5 miles northwest of Dingman's Ferry, Delaware Water Gap National Recreation Area. – elev. ca. 800 ft. - UTM 18 508111E 4564880N – Lat. 41° 14' 07"N, Long. 74° 54' 12"W. – 23.April.2004

*Allocetraria oakesiana* (Tuckerman) Rndlne & Thell – *Lendemer* 2548.

*Amandinea polyspora* (Willey) E. Lay & P. May – *Harris* 49442, *Lendemer* 2608.

*Anaptychia palmulata* (Michaux) Vainio – *Harris* 49443, *Lendemer* 2470.

*Arthonia apatetica* (A. Massalongo) Th. Fries – *Harris* 49447-A.

*Aspicilia laevata* (Acharius) Arnold – *Buck* 46882, *Harris* 49444.

*Bacidia schweinitzii* (Fries ex Michener) G. Schneider – *Lendemer* 3432.

*Bacidina delicata* (Leighton) V. Wirth & Vězda ? – *Buck* 46897 (pycnidia only), *Lendemer* 3561 (apothecia and pycnidia).

No authentic material of *B. delicata* has been seen and our material is placed here on the basis of white apothecia with no trace of pigmentation in section and/or white pycnidia. The Water Gap collections differ from published descriptions in having goniocysts forming isidiod structures.

*Bacidina egenula* (Nylander) Vězda – *Harris* 49445.

*Biatora longispora* (Degelius) Lendemer & Printzen – *Harris* 49446, *Lendemer* 2565.

*Biatora printzenii* Tønsberg – *Harris* 49447, *Lendemer* 2521.

*Caloplaca citrina* (Hoffmann) Th. Fries – *Harris* 49450.

*Caloplaca flavovirescens* (Wulfen) Dalla Torre & Sarnthein – *Lendemer* 3403.

*Chaenothecopsis* sp. – *Lendemer* 2707.

Capitulum green; stalk KOH-, N-; ascospores 1-septate; septum ± weak; not associated with algae. Mixed with "C. nigra."

*Chaenothecopsis nigra* Tibell ? – *Harris* 49449.

Our determination is tentative, since stalk is definitely greenish, KOH-. The material is placed here because the ascospores have a very dark septum.

*Chaenothecopsis rubescens* Vainio ? – *Lendemer* 3409.

Capitulum KOH+ reddish, ascospores ornamented, but *Trentepohlia* is absent.

*Chrismofulvea dialyta* (Nylander) Marbach – *Harris* 49448, *Lendemer* 3441.

*Chrysotrichia candelaris* (L.) J. R. Laundon – *Lendemer* 3409-A.

*Cladonia grayi* G. Merrill ex Sandstede – *Harris* 49451.

*Cladonia didyma* (Fée) Vainio var. *didyma* – *Harris* 49452.

*Cladonia incrassata* Flörke – *Harris* 49453.

*Cladonia macilenta* Hoffmann var. *bacillaris* (Genth) Schaefer – *Harris* 49454.

*Cladonia ochrochlora* Flörke – *Harris* 49455, *Lendemer* 3396.

*Cladonia ramulosa* (Withering) J. R. Laundon – *Harris* 49456.

*Coenogonium pineti* (Acharius) ined. – *Buck* 46910, *Harris* 49457, *Lendemer* 3407.

*Collema furfuraceum* (Arnold) Du Rietz – *Harris* 49458, *Lendemer* 3434.

*Dactylospora lurida* Hafellner\* – *Lendemer* 3406.

*Dermatocarpon luridum* (Withering) J. R. Laundon – *Lendemer* 2576.

*Dibaeis baeomyces* (L. f.) Rambold & Hertel – *Harris* 49459.

*Dictyocatemulata alba* Finley & E. F. Morris – *Harris* 49460.

*Endococcus propinquus* (Körber) D. Hawksworth\* (on *Porpidia albocaerulescens*) – *Harris* 49480-A.

*Flavoparmelia baltimorensis* (Gyelnik & Fóriß) Hale – *Harris* 49462, *Lendemer* 2531.

*Flavoparmelia caperata* (L.) Hale – *Harris* 49463, *Lendemer* 2617.

*Fuscidea arboricola* Coppins & Tønsberg – *Harris* 49472.

*Graphis scripta* (L.) Acharius – *Harris* 49464.

*Halecania* sp. – Harris 49473.

Thallus green, ± shiny, PD+ orange; apothecial disk appearing dotted when wet. This apparently undescribed species seems relatively widespread in eastern North America in very humid, shaded situations.

*Hypocenomyce scalaris* (Acharius) M. Choisy – Harris 49465, Lendemer 2587.

*Hypogymnia physodes* (L.) Nylander – Harris 49466, Lendemer 2538.

*Imshaugia aleurites* (Acharius) S.F. Meyer – Lendemer 2549.

*Lecania cuprea* (A. Massalongo) v. d. Boom & Coppins ? – Lendemer 3438.

*Lecanora* sp. – Lendemer 2696.

*Lecanora strobilina* (Sprengel) Kieffer – Harris 49474, Lendemer 2518.

*Lecidea cyrtidia* Tuckerman – Harris 49475, Lendemer 2575, Lendemer 2599.

*Lepraria* sp. 3 (TLC: atranorin, salazinic acid) – Harris 49483.

*Lepraria caesiella* R. C. Harris in Lendemer – Harris 49484.

*Lepraria caesioalba* (B. de Lesdain) J.R. Laundon – Harris 49477, Lendemer 2582.

*Lepraria incana* (L.) Acharius – Harris 49481.

*Lepraria lobificans* Nylander – Harris 49479, Lendemer 2461.

*Lepraria neglecta* (Nylander) Erichsen – Harris 49480, Lendemer 2557.

*Lepraria normandinoides* ined. - (TLC: protocetraric acid!, on rock) Harris 49482, Lendemer 2464; (TLC: fumarprotocetraric acid!, on bark) – Harris 49478, Lendemer 3421.

*Leptogium cyanescens* (Rabenhorst) Körber – Lendemer 2500, Lendemer 2594.

*Loxospora pustulata* (Brodo & Culberson) R.C. Harris – Harris 49467, Lendemer 2579.

*Melanelia subaurifera* (Nylander) Blanco et al. – Harris 49468, Lendemer 2585.

*Micarea peliocarpa* (Anzi) Coppins & P. James – Harris 49470, Harris 49471, Lendemer 2526, Lendemer 3402.

*Mycobilimbia ahlesii* (Körber) ined. – Harris 49476, Lendemer 2603.

*Mycobilimbia berengeriana* (A. Massalongo) Hafellner & V. Wirth – Buck 46894, Lendemer 2512.

*Myxobilimbia sabuletorum* (Schreber) Hafellner in Hafellner & Türk – Buck 46848, Harris 49486, Lendemer 2567.

*Ochrolechia arborea* (Kreyer) Almborn – Harris 49487, Harris 49488, Lendemer 2574.

*Parmelia sulcata* Taylor – Harris 49489, Lendemer 2618.

*Parmelinopsis spumosa* (Asahina) Elix & Hale (?) – Lendemer 2473, Lendemer 2622.

See Lendemer & Harris (2004) for notes on the identity of this taxon.

*Peltigera polydactylon* (Necker) Hofmann s. lat. – Harris 49485.

*Phaeophyscia adiastola* (Esslinger) Esslinger – Buck 46823, Harris 49490, Lendemer 2497.

*Phaeophyscia rubropulchra* (Degelius) Esslinger – Lendemer 2542.

*Porpidia albocaerulescens* (Wulfen) Hertel & Knoph – Harris 49491, Lendemer 2468, Lendemer 3436.

*Porpidia crustulata* (Acharius) Hertel & Knoph – Harris 49492.

*Pseudosagedia chlorotica* (Acharius) Hafellner & Kalb – Lendemer 2624.

*Punctelia rufecta* (Acharius) Krog – Harris 49493, Lendemer 2621.

*Punctelia subrufecta* auct. Amer. – Harris 49494, Lendemer 2620.

*Rhizocarpon infernulum* (Nylander) Lynge f. *sylvaticum* Fryday – Harris 49495, Lendemer 2519.

*Rhizocarpon reductum* Th. Fries – Lendemer 2457.

*Rinodina?* sp. – Harris 49507, Harris 49508, Lendemer 2702, Lendemer 2703, Lendemer 3424.

Thallus olive greenish to dark brown, saxicolous, consisting of initially scattered, subsquamulose, soraliolate areoles, later forming a continuous rimose-areolate crust with soralia and often with small swollen isidioid outgrowths. No lichen substances were detected. Immature apothecia suggestive of *Rinodina* are present in *Harris 49507* and the general aspect also suggests *Rinodina*. Thus these specimens have been tentatively assigned to *Rinodina*. However, a brief search of the literature did not produce any likely species names.

*Rinodina submimuta* H. Magnusson – Harris 49447-B.

*Scoliciosporum chlorococcum* (Stenhammar) Vězda – Harris 49489-A.

*Scoliciosporum umbrinum* (Acharius) Arnold – Harris 49469.

*Segestria leptalea* (Durieu & Montagne) R. C. Harris – Harris 49492-A (saxicolous), Lendemer 3394 (saxicolous), Lendemer 3395 (corticolous).

*Trapelia placodioides* Coppins & P. James – Harris 49496, Lendemer 2501.

*Trapeliopsis gelatinosa* (Flörke) Coppins & P. James – Harris 49499, Lendemer 3363.

*Trapeliopsis viridescens* (Schrader) Coppins & P. James – *Harris 49497, Harris 49498, Lendemer 2616.*

*Tremella?* sp.\* (on *Punctelia subrudecta*) – *Harris 49510.*

This fungus is very tentatively assigned to *Tremella*. It forms conspicuous, rough, ± resupinate, black structures ca. 2 mm across which initially are ± discoid or cup-shaped, breaking through the lichen cortex. A section showed a palisade of hyphae producing ± globose basidiospores/conidia?.

There are no species of *Tremella* described from *Punctelia* or producing structures of this sort.

*Tuckermanopsis americana* (Sprengel) Hale – *Lendemer 3400.*

*Tuckermanopsis ciliaris* (Acharius) Gyelnik – *Harris 49500, Lendemer 3401.*

*Umbilicaria mammulata* (Acharius) Tuckerman – *Harris 49501, Lendemer 2597.*

*Verrucaria* sp. 5 – *Harris 49461, Lendemer 2517, Lendemer 2627.*

Thallus olive green, thick, rimose-areolate, on concrete; areoles weakly rugose; algae arranged in columns; perithecia immersed; involucellum not laterally expanded, entire; ascospores 17-22.5 x 7.5-9(-10) $\mu$ m.

*Verrucaria praetermissa* (Trevisan) Anzi – *Lendemer 2591, Lendemer 2626.*

*Xanthoparmelia conspersa* (Ehrhart ex Acharius) Hale – *Harris 49502, Lendemer 2286, Lendemer 3361.*

*Xanthoparmelia cumberlandia* (Gyelnik) Hale – *Harris 49503, Harris 49505, Lendemer 2309.*

*Xanthoparmelia plittii* (Gyelnik) Hale – *Harris 49504, Lendemer 2291, Lendemer 3424.*

sterile crustose sp. 5 (corticolous; TLC: norstictic acid; thallus pale olive green, rimose-areolate, with discrete, whitish soralia) – *Harris 49509.*

**2. UNITED STATES OF AMERICA. PENNSYLVANIA. MONROE COUNTY.:** Community Drive Wetlands, drained portions bordered by *Alnus*, and swampy portions primarily with *Acer* and *Fraxinus*, bisected by Hogback Ridge forested with dense hemlocks (*Tsuga*) and large semi-calcareous rock exposures and boulders, ca. 1 mile southeast of Shoemakers, ca. 2 miles south of Bushkill, Delaware Water Gap National Recreation Area. – elev. ca. 700-800 ft. - UTM 18 499427E 4547474N – Lat. 41° 04' 43"N, Long. 75° 00' 24"W. – 24.April.2004

*Acarospora fuscata* (Nylander) Arnold – *Harris 49511.*

*Agonimia* sp. – *Buck 46959.*

*Allocetraria oakesiana* (Tuckerman) Rndlane & Thell – *Harris 49512.*

*Amandinea polyspora* (Willey) E. Lay & P. May – *Lendemer 2600.*

*Anaptychia palmulata* (Michaux) Vainio – *Harris 49513, Lendemer 2551.*

*Anisomeridium distans* (Willey) R.C. Harris – *Lendemer 2509, Lendemer 3392.*

*Anisomeridium polypori* (Ellis & Everhart) M. E. Barr – *Harris 49514.*

*Aspicilia cinerea* (L.) Körber – *Lendemer 2672.*

*Aspicilia laevata* (Acharius) Arnold – *Harris 49515.*

*Bacidia schweinitzii* (Fries ex Michener) A. Schneider – *Harris 49516, Lendemer 2463.*

*Bacidina delicata* (Leighton) V. Wirth & Vězda ? (sterile) – *Harris 49562.*

*Bacidina egenula* (Nylander) Vězda – *Harris 49517.*

*Biatora longispora* (Degelius) Lendemer & Printzen – *Harris 49518, Lendemer 2505.*

*Lendemer 2505* is a rare collection of *B. longispora* on semi-calcareous rock. Otherwise it is almost entirely corticolous, rarely on bryophytes.

*Biatora vernalis* (L.) Fries – *Buck 46963.*

*Botryolepraria lesdainii* (Hue) Canals et al. – *Lendemer 2503.*

*Caloplaca flavovirens* (Wulfen) Dalla Torre & Sarnthein – *Harris 49520, Lendemer 2515A.*

*Chaenotheca furfuracea* (L.) Tibell – *Harris 49521, Lendemer 3437.*

*Chrysotrichia flavovirens* Tønsberg – *Harris 49523.*

This species has not been previously reported from North America. Our identification is tentative. The possibility of a specimen from Connecticut being *C. flavovirens* was first pointed out to Harris by Emmanuel Serúiaux. (It wasn't, but the seed was planted.) Subsequently material seemingly referable to *C. flavovirens* was found (Maine, *Harris 46235* (NY); New Jersey, *Buck 47393* (NY), *Lendemer 1910, Lendemer 3293* (hb. Lendemer, NY)). The material was compared morphologically and chemically with *Lichenes isidiosi et sorediosi crustacei exsiccati* no.7 (Norway, *Tønsberg 13195*). The morphology and color match, but chemistry does not. While rhizocarpic acid is present, the "chrysophthalma unknown" (recently shown to be diffractaic acid,

Elix & Tonsberg, 2004) is absent in North American material. Further study is required to determine if this chemical difference merits taxonomic recognition.

*Cladonia caespiticia* (Persoon) Flörke – *Harris* 49524.  
*Cladonia cylindrica* (A. Evans) A. Evans – *Harris* 49525.  
*Cladonia fimbriata* (L.) Fries – *Harris* 49526, *Lendemer* 2583.  
*Cladonia furcata* (Hudson) Schrader – *Harris* 49527, *Harris* 49533, *Lendemer* 2619.  
*Cladonia incrassata* Flörke – *Harris* 49528, *Lendemer* 2509.  
*Cladonia macilenta* Hoffmann var. *bacillaris* (Genth) Schaeerer – *Harris* 49529.  
*Cladonia ochrochlora* Flörke – *Harris* 49530, *Lendemer* 3414.  
*Cladonia petrophila* R. C. Harris – *Harris* 49531, *Lendemer* 3429.  
*Cladonia ramulosa* (Withering) J. R. Laundon – *Harris* 49532.  
*Coenogonium pineti* (Acharius) ined. – *Harris* 49534, *Lendemer* 2467.  
*Dermatocarpon americanum* Vainio – *Lendemer* 2588.  
*Endocarpon* sp. – *Lendemer* 2604.  
*Endocarpon pallidulum* (Nylander) Nylander – *Harris* 49535, *Lendemer* 2694.  
*Endococcus propinquus* (Körber) D. Hawksworth\* – *Harris* 49594 (on *Porpidia albocaerulescens*), *Harris* 49536 (on *Verrucaria* sp.).  
*Evernia mesomorpha* Nylander – *Lendemer* 2553.  
*Fellhanera* sp. 1 – *Harris* 49538, *Lendemer* 2628, *Lendemer* 2630, *Lendemer* 2693.  
*Fellhanera* sp. 2 – *Harris* 49537, *Lendemer* 2410.  
*Flavoparmelia caperata* (L.) Hale – *Harris* 49539, *Lendemer* 2555.  
*Fuscidea arboricola* Coppins & Tønsberg – *Harris* 49593.  
*Gyalidea* sp. – *Harris* 49517 (filed with *Bacidina egenula*), *Lendemer* 3560.

The material is not in good condition. Even so, it does not seem to match any described species.

*Heterodermia speciosa* (Wulfen) Trevisan – *Harris* 49540.  
*Hypogymnia physodes* (L.) Nylander – *Harris* 49541, *Lendemer* 2537.  
*Ionaspis alba* Lutzoni – *Harris* 49592, *Lendemer* 2623.  
*Lecanora perplexa* Brodo – *Harris* 49543, *Lendemer* 2511.

Brodo (1984) included several somewhat diverse morphologies in *L. perplexa* which did not fit well elsewhere. Our material falls into the "*Lecanora subimmergens* in which the thallus was too granulose" category.

*Lecanora strobilina* (Sprengel) Kieffer – *Lendemer* 2507.  
*Lecanora thysanophora* R.C. Harris – *Harris* 49544, *Lendemer* 2378.  
*Lepraria* sp. 1 (TLC: xanthone?; thallus greenish-gray, dispersed eventually forming a thin continuous crust) – *Lendemer* 3422.  
*Lepraria* sp. 2 (TLC: usnic acid, zeorin (tr.) terpenes (tr.); thallus light green, dispersed eventually forming a thin continuous crust) – *Lendemer* 2453.  
*Lepraria* sp. 4 (TLC: unknown spots UV+ yellow, zeorin?; thallus weakly yellowish; no medulla) – *Harris* 49564.  
*Lepraria caesiella* R. C. Harris in Lendemer – *Harris* 49563, *Lendemer* 2304.  
*Lepraria lobificans* Nylander – *Harris* 49560, *Lendemer* 2451, *Lendemer* 3360.  
*Leptogium cyanescens* (Rabenhorst) Körber – *Lendemer* 2494, *Lendemer* 2570.  
*Leptogium dactylinum* Tuckerman – *Harris* 49545, *Lendemer* 2490, *Lendemer* 2592, *Lendemer* 2613.  
*Micarea peliocarpa* (Anzi) Coppins & P. James – *Harris* 49546, *Lendemer* 2605.  
*Muellerella lichenicola* (Sommerfelt) D. Hawksworth\* (on *Caloplaca flavovirescens*) – *Lendemer* 2515B.  
*Mycobilimbia berengeriana* (A. Massalongo) Hafellner & V. Wirth – *Lendemer* 2563.  
*Mycocalicium subtile* (Persoon) Szatala – *Harris* 49522, *Harris* 49547, *Lendemer* 2530.  
*Myelochroa aurulenta* (Tuckerman) Elix & Hale – *Harris* 49548, *Lendemer* 2471.  
*Nadvornikia soreciata* R.C. Harris – *Harris* 49549, *Lendemer* 2502.  
*Ochrolechia arborea* (Kreyer) Almborn – *Harris* 49565, *Lendemer* 2520, *Lendemer* 2524.  
*Opegrapha bicolor* R. C. Harris & Lendemer sp. nov.<sup>1</sup> – *Harris* 49566.  
*Parmelia squarrosa* Hale – *Harris* 49567, *Lendemer* 2547, *Lendemer* 2584.  
*Parmelia sulcata* Taylor – *Lendemer* 2491.  
*Parmelinopsis spumosa* (Asahina) Elix & Hale (?) – *Harris* 49568.  
*Peltigera evansiana* Gyelnik – *Harris* 49569, *Lendemer* 2488.  
*Peltigera praetextata* (Flörke ex Sommerfelt) Zopf – *Harris* 49570, *Lendemer* 3410.

*Pertusaria pustulata* (Acharius) Duby – *Harris* 49571.  
*Phaeocalicium polyporaeum* (Nylander) Tibell – *Harris* 49572.  
*Phaeophyscia adiastola* (Esslinger) Esslinger – *Harris* 49573, *Harris* 49574, *Lendemer* 2485, *Lendemer* 2544, *Lendemer* 2556, *Lendemer* 2560, *Lendemer* 2569.  
*Phaeophyscia rubropulchra* (Degelius) Esslinger – *Harris* 49575.  
*Phaeophyscia sciastra* (Acharius) Moberg – *Lendemer* 2525.  
*Phaeophyscia squarrosa* Kashiwadani – *Harris* 49576, *Lendemer* 2472, *Lendemer* 2596.  
*Phlyctis* sp. (saxicolous) – *Harris* 49517, *Harris* 49561, *Lendemer* 2606.  
*Physcia millegrana* Degelius – *Harris* 49578.  
*Physcia phaea* (Tuckerman) J. W. Thomson – *Harris* 49579.  
*Porpidia albocaerulescens* (Wulfen) Hertel & Knoph – *Harris* 49580, *Lendemer* 2601.  
*Pseudosagedia chlorotica* (Acharius) Hafellner & Kalb – *Harris* 49587, *Lendemer* 2568.  
*Pseudosagedia guentheri* (Wallroth) Hafellner & Kalb – *Lendemer* 2474, *Lendemer* 2625.  
*Psilolechia lucida* (Acharius) M. Choisy – *Harris* 49581, *Lendemer* 2676.  
*Punctelia rufecta* (Acharius) Krog – *Harris* 49582, *Lendemer* 2533.  
*Punctelia subrudecta* auct. Amer. – *Harris* 49583, *Lendemer* 2492.  
*Pyxine sorediata* (Acharius) Montagne – *Lendemer* 2448.  
*Ropalospora viridis* (Tønsberg) Tønsberg ? – *Lendemer* 3412.  
*Stigmidium* sp.\* – *Harris* 49517 (on unidentifiable crust [filed with *Bacidina egenula*]).  
*Strigula stigmatella* (Acharius) R.C. Harris – *Lendemer* 3391.  
*Thelenella muscorum* (Fries) Vainio – *Buck* 46928.  
*Trapelia involuta* (Taylor) Hertel – *Harris* 49584.  
*Trapelia placodioides* Coppins & P. James – *Harris* 49585, *Lendemer* 2510, *Lendemer* 2589.  
*Trapeliopsis viridescens* (Schrader) Coppins & P. James – *Buck* 46971, *Harris* 49586.  
*Verrucaria* sp. 6 – *Harris* 49535-A.  
 Thallus pale brown, thick, rimose areolate, on HCl+ rock; perithecia immersed, several/areole; ascospores 14-17 x 5.5-6.5µm.  
*Verrucaria calkinsiana* Servít – *Harris* 49588, *Lendemer* 2573.  
*Vezdaea leprosa* (P. James) Vězda – *Buck* 46955, *Lendemer* 3545.  
*Xanthoparmelia angustiphylla* (Gyelnik) Hale – *Lendemer* 3362.  
*Xanthoparmelia plittii* (Gyelnik) Hale – *Harris* 49589.  
 sterile crustose sp. 1 (saxicolous, rock HCl+; TLC: no lichen substances; thallus pale brownish gray, weakly areolate, with minute pale green soralia) – *Harris* 49592, *Lendemer* 2287.  
 sterile crustose sp. 4 (corticulous, TLC: perlatolic acid group; sorediate) – *Lendemer* 2452, *Lendemer* 2454.  
 sterile crustose sp. 8 (saxicolous; TLC: gyrophoric acid; thallus weakly placodioid, rimose-areolate, gray with thin white pruina, with soralia ; soredia brown; photobiont chlorococcoid) – *Harris* 49591.  
 sterile crustose sp. 10 (corticulous; TLC: perlatolic acid group; thallus initially thin, scanty, soon forming bright green soralia which then coalesce; pycnidia present with conidia suggestive of *Fellhanera*) – *Harris* 49590.

**3. UNITED STATES OF AMERICA. PENNSYLVANIA. MONROE COUNTY.:** Series of localities along Freeman Tract Road (River Road North) between intersection with Community Drive and terminus on west shore of Delaware River, ca. 2 miles southeast of Shoemakers, south of Bushkill, Delaware Water Gap National Recreation Area. – elev. ca. 500 ft. - UTM 18 499336E 4546600N – Lat. 41° 04' 15"N, Long. 75° 00' 28"W. – 25.April.2004

*Acarospora canadensis* H. Magnusson – *Harris* 49600.  
*Agonimia* sp. – *Buck* 46985.  
*Amandinea polyspora* (Willey) E. Lay & P. May – *Harris* 49636.  
*Anisomeridium distans* (Willey) R. C. Harris – *Harris* 49617.  
*Arthonia apatetica* (A. Massalongo) Th. Fries – *Lendemer* 2292-A.  
*Aspicilia laevata* (Acharius) Arnold – *Harris* 49605.  
*Bacidina* sp. (saxicolous) – *Lendemer* 2506, *Lendemer* 3443.  
 Thallus of granular areoles, dispersed to aggregated, green; apothecia pale to dark brown with margin mostly excluded; exciple, hymenium and hypothecium pale, often blotched with brown, KOH+ purplish.

*Bacidina egenula* (Nylander) Vězda – *Harris* 49600-A.  
*Biatora longispora* (Degelius) Lendemer & Printzen – *Buck* 47004.  
*Biatora printzenii* Tønsberg – *Harris* 49619, *Lendemer* 3439.  
*Botryolepraria lesdainii* (Hue) Canals et al. – *Harris* 49602, *Lendemer* 2566.  
*Caloplaca* sp. – *Lendemer* 3405.  
*Caloplaca flavovirescens* (Wulfen) Dalla Torre & Sarnthein – *Harris* 49595, *Lendemer* 2610.  
*Caloplaca sideritis* (Tuckerman) Zahlbrückner – *Lendemer* 3411.  
*Caloplaca subsoluta* (Nylander) Zahlbrückner – *Buck* 46994, *Harris* 49596, *Lendemer* 2686.  
*Candelaria concolor* (Dickson) Stein – *Lendemer* 2559.  
*Cladonia cristatella* Tuckerman – *Harris* 49639.  
*Cladonia cylindrica* (A. Evans) A. Evans – *Harris* 49640, *Lendemer* 2450.  
*Cladonia grayi* G. Merrill ex Sandstede – *Harris* 49637, *Harris* 49638.  
*Cladonia macilenta* Hoffmann var. *bacillaris* (Genth) Schaeerer – *Harris* 49620.  
*Cladonia peziziformis* (Withering) J.R. Laundon – *Harris* 49621, *Harris* 49641, *Lendemer* 2456.  
*Endocarpon* sp. – *Harris* 49601.  
*Endococcus propinquus* (Körber) D. Hawksworth\* (on *Porpidia albocaerulescens*) – *Harris* 49635.  
*Fellhanera* sp. 1 – *Harris* 49617.  
*Flavoparmelia baltimorensis* (Gyelnik & Fóriš) Hale – *Harris* 49622.  
*Flavoparmelia caperata* (L.) Hale – *Lendemer* 2536.  
*Graphis scripta* (L.) Acharius – *Lendemer* 2578.  
*Heterodermia speciosa* (Wulfen) Trevisan – *Harris* 49604, *Lendemer* 2546.  
*Ionaspis alba* Lutzoni – *Lendemer* 2611.  
*Lecanora symmicta* (Acharius) Nylander – *Harris* 49643, *Harris* 49644.  
*Lecanora thysanophora* R.C. Harris – *Lendemer* 2465.  
*Lecidea cyrtidia* Tuckerman – *Harris* 49645, *Lendemer* 2580.  
*Lepraria* sp. 2 (TLC: usnic acid, zeorin (tr.), terpenes (tr.)) – *Harris* 49406, *Lendemer* 2462.  
*Lepraria caesiella* R.C. Harris in Lendemer – *Lendemer* 2305.  
*Lepraria lobificans* Nylander – *Harris* 49607, *Lendemer* 2455.  
*Leptogium cyanescens* (Rabenhorst) Körber – *Harris* 49623.  
*Leptogium dactylinum* Tuckerman – *Harris* 49624.  
*Leptogium lichenoides* (L.) Zahlbrückner – *Lendemer* 2487, *Lendemer* 2571.  
*Melanelia subaurifera* (Nylander) Blanco et al. – *Harris* 49646, *Lendemer* 2489.  
*Merismatium peregrinum* (Flotow) Triebel\* (on *Rimularia badioatra*) – *Harris* 49618.  
 Apparently new to North America.  
*Micarea erratica* (Körber) Hertel et al. – *Harris* 49647.  
*Myelochroa aurulenta* (Tuckerman) Elix & Hale – *Harris* 49597, *Harris* 49608, *Lendemer* 2541, *Lendemer* 2543.  
 Harris 49608 has apothecia, which are only rarely produced in this sorediate species.  
*Myelochroa galbina* (Acharius) Elix & Hale – *Harris* 49609, *Harris* 49625, *Lendemer* 2532.  
*Ochrolechia arborea* (Kreyer) Almborn – *Harris* 49649, *Harris* 49650, *Harris* 49651.  
*Parmelia squarrosa* Hale – *Lendemer* 2498.  
*Parmelia sulcata* Taylor – *Lendemer* 2595.  
*Peltigera evansiana* Gyelnik – *Lendemer* 2493.  
*Peltigera praetextata* (Flörke ex Sommerfelt) Zopf – *Buck* 46993, *Harris* 49626.  
*Phaeocalicium curtisii* (Tuckerman) Tibell – *Buck* 47012.  
*Phaeophyscia adiastola* (Esslinger) Esslinger – *Harris* 49627, *Lendemer* 2527.  
*Phaeophyscia pusilloides* (Zahlbrückner) Esslinger – *Harris* 49628, *Lendemer* 2540, *Lendemer* 2545.  
*Physcia millegrana* Degelius – *Harris* 49629, *Harris* 49652, *Lendemer* 2477, *Lendemer* 2558.  
*Physcia phaea* (Tuckerman) Thomson – *Harris* 49630, *Lendemer* 2478, *Lendemer* 2615.  
*Physcia stellaris* (L.) Nylander – *Lendemer* 3404.  
*Physconia leucoleiptes* (Tuckerman) Esslinger – *Harris* 49610, *Lendemer* 2534, *Lendemer* 2581.  
*Porpidia albocaerulescens* (Wulfen) Hertel & Knoph – *Harris* 49611.  
*Porpidia crustulata* (Acharius) Hertel & Knoph – *Harris* 49653.  
*Protoblastenia rupestris* (Scopoli) J. Steiner – *Harris* 49612.  
*Pseudosagedia cestrensis* (Tuckerman ex Michener) R.C. Harris – *Lendemer* 2577.  
*Punctelia rufecta* (Acharius) Krog – *Harris* 49613, *Lendemer* 2561.

*Punctelia subrudecta* auct. Amer. – Lendemer 2552.

*Pyrrhospora varians* (Acharius) R.C. Harris s. lat. – Harris 49654, Lendemer 2516.

*Pyxine sorediata* (Acharius) Montagne – Harris 49631, Lendemer 2667.

*Rimularia badioatra* (Krempelhuber) Hertel & Rambold – Harris 49618.

The specimen has only a few apothecia which lack ascospores, possibly because they are infested with *Merismatium peregrinum*. The determination is suggested by immature asci of *Rimularia* type, presence of gyrophoric acid, and presence of *M. peregrinum* (restricted to *Rimularia badioatra* and *R. gibbosa* (Acharius) Coppins et al.).

*Rinodina* sp. (corticulous) – Lendemer 2522.

*Rinodina oxydata* (A. Massalongo) A. Massalongo – Harris 49598, Harris 49599, Harris 49614, Lendemer 2528, Lendemer 2612.

*Sarcogyne regularis* Körber – Harris 49615.

*Staurothele diffractella* (Nylander) Tuckerman – Harris 49632, Lendemer 2562.

*Thelidium minutulum* Körber – Harris 49603, Lendemer 2586.

*Thelidium zwackhii* (Hepp) A. Massalongo – Lendemer 2609-A.

*Trapelia coarctata* (Smith) M. Choisy s. lat. – Harris 49633.

*Trapelia placodioides* Coppins & P. James – Lendemer 2572.

*Verrucaria* sp. 1 – Lendemer 2466.

Thallus thin, rarely slightly rimose, on HCl– rock; perithecia superficial; involucellum lacking below; ascospores 15-17 x 6-8 $\mu$ m.

*Verrucaria* sp. 2 – Harris 46655, Lendemer 2469.

With the above; thallus thicker, distinctly rimose, on HCl– rock; perithecia immersed in the thallus with abundant "oil" droplets at base; involucellum ± expanded laterally and thin below, ascospores 17-20 x 7-8.5 $\mu$ m.

*Verrucaria* sp. 3 – Lendemer 2564, Lendemer 2609.

Thallus thick brown, rimose, on HCl+ rock; photobiont arranged in columns (as in *V. nigrescens* group); perithecia mostly immersed in the thallus; involucellum present below; ascospores 20-23 x (7.5)-9-12.5 $\mu$ m.

*Verrucaria* sp. 4 – Buck 46995.

Externally similar to species 1 but ascospores larger, 19-21 x 8.5-10 $\mu$ m and on HCl+ rock.

*Verrucaria baldensis* A. Massalongo – Harris 49634, Lendemer 2602.

*Verrucaria calkinsiana* Servít – Harris 49616, Lendemer 2607.

*Xanthoparmelia plittii* (Gyelnik) Hale – Harris 49656.

sterile crustose sp. 2 (corticulous; TLC: unknown; thallus grayish, rimose, with pale greenish soralia) – Lendemer 2292 .

sterile crustose sp. 3 (corticulous; TLC: atranorin, zeorin; thallus white, continuous, with concolorous soralia eventually coalescing) – Lendemer 2449.

sterile crustose sp. 6 (corticulous; TLC: no substances detected; thallus gray green, initially ± continuous, becoming rimose, soraliate, with conspicuous white prothallus) – Lendemer 2679.

sterile crustose sp. 7 (corticulous; TLC usnic acid, zeorin; rather similar to *Lecanora thysanophora* but lacking the distinctive prothallus and lacking atranorin) – Harris 49657, Harris 49658, Harris 49659, Harris 49660.

sterile crustose sp. 9 (corticulous; TLC: no substances detected; thallus brownish gray, without obvious prothallus, with small pale green soralia) – Harris 49661.

**4. UNITED STATES OF AMERICA. PENNSYLVANIA. PIKE COUNTY.:** Upland oak (*Quercus*) dominated forest with exposed east facing slopes and a small maple (*Acer*) swamp with *Sphagnum* drainage, Pocono Environmental Education Center, Delaware Water Gap National Recreation Area. – elev. ca. 750 ft. - UTM 18 507598E 4557406N – Lat. 41° 10' 05"N, Long. 74° 54' 34"W. – 26.April.2004

*Amandinea polyspora* (Willey) E. Lay & P. May – Lendemer 3433.

*Anaptychia palmulata* (Michaux) Vainio – Lendemer 2480.

*Arthonia caesia* (Flotow) Körber – Lendemer 2673.

*Cetrelia olivetorum* (Nylander) Culberson & C. Culberson – Lendemer 3426.

*Chaenothecopsis debilis* (Turner & Borrer ex Smith) Tibell – Lendemer 2706, Lendemer 2710.

*Cladonia chlorophaea* (Flörke ex Sommerfelt) Sprengel – *Lendemer* 3428.  
*Cladonia cylindrica* (A. Evans) A. Evans – *Lendemer* 2668, *Lendemer* 3423.  
*Cladonia polycarpoides* Nylander – *Lendemer* 2637.  
*Cladonia pyxidata* (L.) Hoffmann – *Lendemer* 2446.  
*Cladonia rangiferina* (L.) F. H. Wiggers – *Lendemer* 2389, *Lendemer* 2459.  
*Cladonia rei* Schaefer – *Lendemer* 2550, *Lendemer* 2593.  
*Cladonia squamosa* Hoffmann – *Lendemer* 2665.  
*Cladonia subtenuis* (Abbayes) Mattick – *Lendemer* 2388, *Lendemer* 2460.  
*Dibaeis baeomyces* (L. f.) Rambold & Hertel – *Lendemer* 2598.  
*Diploschistes scruposus* (Schreber) Norman – *Lendemer* 3435.  
*Evernia mesomorpha* Nylander – *Lendemer* 2539.  
*Flavoparmelia baltimorensis* (Gyelnik & Fóriss) Hale – *Lendemer* 2486.  
*Flavoparmelia caperata* (L.) Hale – *Lendemer* 2475, *Lendemer* 2504.  
*Flavopunctelia flaventior* (Stirton) Hale – *Lendemer* 2484.  
*Gyalideopsis* sp. – *Lendemer* 2590 (hyphophores only).  
*Heterodermia speciosa* (Wulfen) Trevisan – *Lendemer* 2483.  
*Lecanora oreinoides* (Körber) Hertel – *Lendemer* 2629.  
*Leptogium dactylinum* Tuckerman – *Lendemer* 2529.  
*Lobaria pulmonaria* (L.) Hoffmann – *Lendemer* 2499.  
*Loxospora pustulata* (Brodo & Culberson) R.C. Harris – *Lendemer* 2479.  
*Mycocalicium albonigrum* (Nylander) Fink – *Lendemer* 2523.  
*Myelochroa aurulenta* (Tuckerman) Elix & Hale – *Lendemer* 2535.  
*Myelochroa obsessa* (Acharius) Elix & Hale – *Lendemer* 2614.  
*Ochrolechia arborea* (Kreyer) Almborn – *Lendemer* 2458.  
*Ochrolechia pseudopallescens* Brodo – *Lendemer* 2513.  
*Ochrolechia yasudae* (Vainio) Oshio – *Lendemer* 2554.  
*Parmelia squarrosa* Hale – *Lendemer* 2226, *Lendemer* 2496.  
*Parmelia sulcata* Taylor – *Lendemer* 2476, *Lendemer* 2495.  
*Phaeophyscia adiastola* (Esslinger) Esslinger – *Lendemer* 2482, *Lendemer* 2485.  
*Phaeophyscia rubropulchra* (Degelius) Esslinger – *Lendemer* 2481.  
*Physcia pseudospeciosa* J. W. Thomson – *Lendemer* 2447.

*Physcia pseudospeciosa* is possibly one of North America's rarer endemic macrolichens. It is known from less than ten sites. In addition to this collection, we have seen material from one additional site in Pennsylvania (see Lendemer, 2005) and two sites in North Carolina. The type is from West Virginia (Thomson, 1963), and the species was reported by Moberg (Moberg, 2002) from Georgia, North Carolina and the state of Chihuahua, Mexico.  
*Pyxine sorediata* (Acharius) Montagne – *Lendemer* 2355. .  
*Rhizocarpon grande* (Flörke ex Flotow) Arnold – *Lendemer* 3571.  
*Trapeliopsis flexuosa* (Fries) Coppins & P. James – *Lendemer* 2347.  
*Tuckermanopsis ciliaris* (Acharius) Gyelnik – *Lendemer* 3427.  
*Xanthoparmelia conspersa* (Ehrhart ex Acharius) Hale – *Lendemer* 2754.  
*Xanthoparmelia plittii* (Gyelnik) Hale – *Lendemer* 2288, *Lendemer* 2381.  
*Xanthoparmelia somloënsis* (Gyelnik) Hale – *Lendemer* 2308, *Lendemer* 2635.  
*Xanthoparmelia tasmanica* (Hooker f. & Taylor) Hale – *Lendemer* 2307, *Lendemer* 2514.

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#### END NOTE

**1. *Opegrapha bicolor* R. C. Harris & Lendemer, *sp. nov.***

*Opegrapha* distincta, disco et interdum margine albo pruinosa, margine saepe aurantico pruinosa, ascosporis 3-septatis, 16-19 x 4-5.5 µm et conidiis 1-septatis 12.5-13.5 x 1.5-2 µm.

TYPE: USA. PENNSYLVANIA. MONROE COUNTY: Middle Smithfield Township, Delaware Water Gap National Recreation Area, Community Drive wetlands/Hogback Ridge, 1.5 km S of Bushkill, 41°04'46"N, 75°00'44"W, mesic forest, on white oak at edge of wetland. 24.April.2004. R.C. Harris 49566 (NY, holotype; hb. Lendemer, isotype).

Thallus whitish (brownish where photobiont absent), immersed in bark, forming patches to 2 cm across; photobiont *Trentepohlia*. Ascomata lirelliform, slightly immersed to sessile, sinuous and/or bent, mostly unbranched, occasionally once branched, mostly narrowed at ends, to 1.5 mm. long, 0.2-0.3 mm across, with disk white pruinose and margin often becoming white pruinose or in places orange pruinose; margin slightly raised; orange pruina KOH+ red, not dissolving. Exciple brown-black, 25-50 µm thick at sides, variable below, absent, thin or rarely ± equal to upper part (depending on degree of immersion?). Epiphymenium pale yellow brown, covered with coarse colorless crystals of pruina. Hymenium colorless, ca. 50 µm high. Ascii subcylindrical, with spores in two rows. Ascospores colorless, becoming brownish and roughened in old age, 3-septate, with cells roughly equal, clavate, 16-17.8-19 x 4-4.8-5.5 µm. Pycnidia abundant, conspicuous, conical, white and/or orange pruinose, to 1.5 mm across. Conidia colorless, rod-shaped, straight or slightly curved, 1-septate, 12.5-13.5 x 1.5-2 µm.

*Opegrapha bicolor* (named for the two colors of pruina) is an elegant and distinctive species. In an admittedly limited survey, we find only three other species with orange pruina. *Opegrapha ochrocheila* Nylander is probably the most similar in ascospore and conidial size, but differs in lacking white pruina and in having conidia 1-3 septate (2-septate *fide* Torrente & Egea, 1989). *Opegrapha ochrocincta* R. G. Werner also lacks white pruina and has nonseptate conidia 4-6 µm long. In *Opegrapha aurantiaca* de Lesdain, from Cuba, the disk is said to be weakly white pruinose, but material identified as this from Florida is a more robust species with strong orange pruina on the margin, lacking a white pruina, and the conidia in Cuban type are said to be only 4-6 µm long.

## *Acarospora epilutescens* Rediscovered

KERRY KNUDSEN<sup>1</sup>

ABSTRACT. — *Acarospora epilutescens* Zahlbruckner is assigned a neotype. *Acarospora albida* H. Magnusson is made a synonym of *A. epilutescens*. Its relation to *Acarospora epilutescens* *sensu* Hasse and Magnusson is discussed.

### INTRODUCTION

The study of the genus *Acarospora* in North America is fraught with problems (Knudsen 2004a) and each problem needs to be carefully evaluated and corrected for the progressive development of *Acarospora* studies.

*Acarospora epilutescens* Zahlbruckner is an especially serious problem because the confusion obscures a valid taxon of the American southwest that is under-collected and possibly rare. Due to the errors of Weber (Knudsen 2004a and 2004b), *A. epilutescens* Zahlbruckner has become a synonym of *A. schleicheri* in the North American checklist. (Essliger, 1997). The errors of Hasse and Magnusson discussed in this paper have further obscured the taxon. Most specimens filed *A. epilutescens* in herbaria are a variation of *Acarospora strigata* (Nylander) Jatta and were distributed by Hasse or are determinations based on this error or Magnusson's elaboration of this error.

### TAXONOMIC TREATMENT

#### *Acarospora epilutescens* Zahlbruckner

*Acarospora epilutescens* Zahlbruckner, Beihefte zum Botan. Zentralbl., 13: 161. 1902. TYPE: Palm Springs, California, USA. H.E. Hasse N816 (W, lost). NEOTYPE (**designated here**): Palm Springs, Riverside Co., California, USA. sine date; H.E. Hasse s.n. = *Lichenes Rariores Exsiccati*, 73. (W!).

Syn nov. *Acarospora albida* H. Magnusson, Monograph of the genus *Acarospora*, Kungli Svensk Vetenskapsakademiens Handlingar, ser. 2, 8(4): 73-74. 1929. TYPE: "In montibus Texanis", Texas, USA. sine date; C. Wright s.n. (UPS!, holotype).

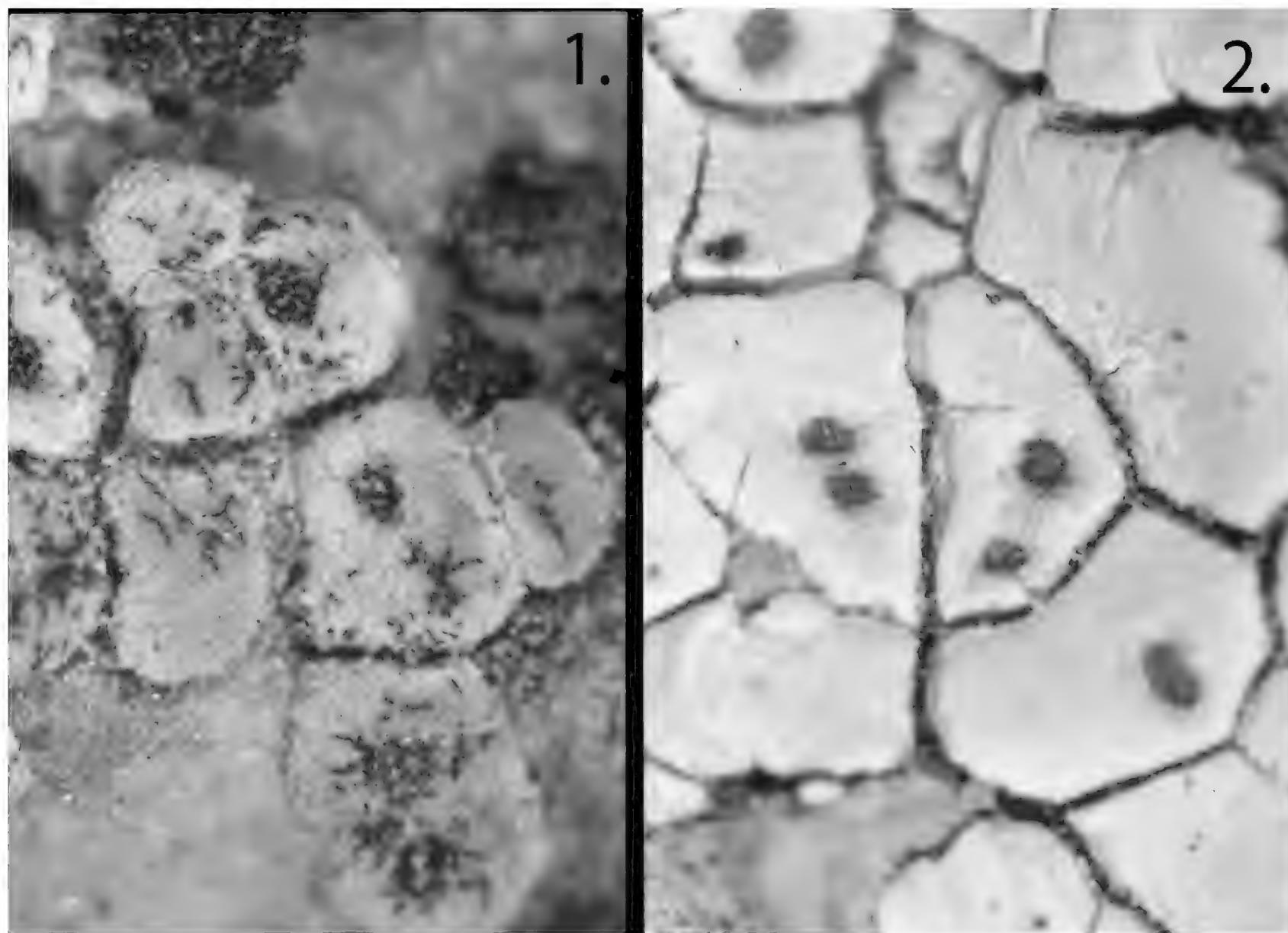
*Acarospora epilutescens* Zahlbruckner is known only from two locations: an un-dated collection from the east side of the San Jacinto Mountains at Palm Springs, California, from the holotype collection No. 816 by Hasse and probably another collection from the same area on a later trip by Hasse (fig. 1) used for the Zahlbruckner Exsiccati N72 (W). Zahlbruckner based the protologue on Hasse's collection No. 816. The other location is the "mountains of Texas" according to the annotation of Tuckerman on an un-dated, un-numbered Wright collection from Texas (UPS) (Fig. 2). I doubt if Zahlbruckner ever saw Wright's collection.

*Acarospora epilutescens* is a yellow *Acarospora* of the subgenus *Xanthothallia*. The areoles are covered with a fine pruinose coating that appears to be weddelite (Giordani et al., 2003). The yellow cortex is not visible until the areoles are wetted (Fig. 1).

The areoles are contiguous, ca. 0.3-1.0 mm. across, relatively thin, about 0.3-0.5 mm thick, broadly attached, with the lower surface under the rim ecorcate and white. The upper cortex is yellow, presumably containing rhizocarpic acid, and 30-50µm thick. The algal layer is composed of algal cells ±10µm in a continuous and even stratum ca. 100µm thick. The medulla's height varies with height of areole, is opaque in water and continuous with attaching plectenchyma. The upper surface of disc is relatively flat, round, blackish, and about 0.1-0.2 across. The hymenia I inspected are ca. 100-110µm high, the epihymenia 15µm thick, yellowish brown, paraphyses coherent in water, 1.5-2.0 in diameter at base and little expanded at apex. The

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**Fig. 1.** Neotype of *Acarospora epilutescens* Zahlbruckner, Hasse s.n. (W), detail of pruinose areoles with surface crisscrossed with an undetermined fungus. **Fig. 2.** Holotype of *Acarospora albida* H. Magnusson, Wright s.n. (UPS), detail of densely pruinose areoles. (Photographs by R. Schoeninger)



asci are elongated clavate and polyspored. The mature spores I observed are broadly ellipsoid, 4.0-4.2x2.0-2.5 $\mu\text{m}$ . The only clear difference between my observations and the protologue is the height of the hymenium which Zahlbruckner described as “170-180 $\mu\text{m}$ .” I have found large variation in hymenial heights in some species of *Acarospora*, while in other species the hymenial height is uniformly within a range of ca. 40 $\mu\text{m}$  in variation. Due to the lack of material, no conclusion can be drawn about this discrepancy between my observations and protologue. Since the protologue appears to be based on one specimen from California, only the collection of new specimens will allow an accurate understanding of the range of variation in the taxon.

The holotype Hasse designated as No. 816 (Zahlbruckner 1902) was undated (Magnusson 1929b). Zahlbruckner did not designate the location of the herbarium where it was deposited. Magnusson reported it at Vienna (Magnusson 1929b) and a search by Othmar Bruess could not locate it. The Zahlbruckner exsiccate (fig. 1) did not differ from Wright collection except its surface is crisscrossed with an undetermined fungus common on *Acarospora* species in California. The Zahlbruckner exsiccate at W is designated as the neotype. Because the Zahlbruckner exsiccate is not No. 816 it is assumed to be a later collection.

Herbaria with the Zahlbruckner exsiccata N73 should not automatically assume they have *Acarospora epilutescens* unless areoles have at least a fine white pruinose covering which when wetted reveals the yellow cortex of the areole. The reason for this warning is a serious case of mis-determinations has plagued this rare species. Hasse collected *Acarospora epilutescens*, with areoles of *Acarospora strigata* (Nylander) Jatta of the variation where the pruina is thin exposing the brown cortex. This variation is common on sun-baked granite on the east side of the San Jacinto Mountains. Hasse thought this was the species Zahlbruckner described. Throughout his career Hasse determined as *A. epilutescens* all epruinose or lightly pruinose squamules of *A. strigata*. Nonetheless herbaria should not automatically annotate them as *A. strigata* without checking for the real *A. epilutescens*.

Confused by both Zahlbruckner's description and Hasse's determinations, as well as mixture of species in the holotype, Magnusson described epruinose or lightly pruinose squamules of *A. strigata sensu* Hasse as *A.*

*epilutescens* (Magnusson 1929b), glossing over the lack of yellow in areoles he studied while mentioning in holotype *A. epilutescens* was mixed with a yellow *Acarospora*. He never corrected his error.

To further complicate the recognition of the true *A. epilutescens* Magnusson, earlier in his study of yellow *Acarospora* in North America (1929a), included Wright's collection as a paratype when he described *Acarospora subalbida* from a Hasse collection from Topanga Canyon in the Santa Monica Mountains in Los Angeles County, California. *Acarospora subalbida* H. Magnusson is actually a heavily pruinose variation of *Acarospora socialis* H. Magnusson and specimens of it from the Santa Monica Mountains were identified by Hasse as *A. xanthophana* (Nylander) Jatta form *dealbata* Tuckerman. For an authentic example of this form of heavily pruinose yellow *Acarospora*, see Knudsen 1558 (UCR, hb. Lendemer) collected in the same area of the Santa Monica Mountains. *A. xanthophana* var. *dealbata* not determined by Hasse or not from Santa Monica Mountains are usually a variation of *A. strigata*. The main differences between the two species is *Acarospora socialis* H. Magnusson develops a thick stipe and corticate underside in mature squamules while *A. epilutescens* has areoles with narrow ecorticate underside broadly attached. The pruina on *A. socialis* often varies from a thick to thin coating and more often is completely lacking. It should be noted here that I use the name *A. socialis* H. Magnusson based on my own developing research. The most common yellow *Acarospora* in California, *Acarospora socialis* is included in *Acarospora bella* (Nylander) Jatta by Clauzade and Roux (1991). But I feel at this stage in my research *A. bella/A. xanthophana* is actually a terricolous yellow species of high elevations in the mountains of Bolivia and Chile, with rhizohyphae. It does not include at least two taxa occurring in Mexico and North America: *A. chrysops* (Tuckerman) H. Magnusson, and *A. socialis* H. Magnusson.

Magnusson was bothered by the fine weddelite pruina and apothecia of Wright's collection and changed his mind about it being *A. subalbida*. In his monograph (1929b) he described the new species *Acarospora albida* based on Wright's single collection. I recognize that Wright's specimen is the same species as Zahlbruckner's *A. epilutescens*, and designate *A. albida* is a synonym of the basionym *A. epilutescens*.

## CONCLUSION

With this problem untangled, we can look clearly at *Acarospora epilutescens*. It is so far known from only two or three historic collections at two locations. Because of the distance between the two locations-- Palm Springs, California and some unknown mountains in Texas---I hope for its rediscovery in the field. Now that the taxon is clearly delineated, we may also find it determined as another species in herbaria. Only new specimens will allow a fuller evaluation of the species and its relation to other species of the Subgenus *Xanthothallia*.

## ACKNOWLEDGEMENTS

I thank the ASU Lichen Herbarium where the author examined many yellow *Acarospora* types and specimens on loan from W, UPS and other herbaria for the Sonoran flora project. I thank T.L. Esslinger and G. Moore for their reviews. I thank S.C. Tucker for her corrections.

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## Some Name Changes in *Porina* s. lat.

RICHARD C. HARRIS<sup>1</sup>

**ABSTRACT.** — North American species of *Porina* Acharius s. lat (Porinaceae, Ostropomycetidae, Lecanoromycetes) lacking setae assigned by Harris to *Trichothelium* Müll. Arg. are here recognized as *Pseudosagedia* (Müll. Arg.) M. Choisy to co-ordinate with recent European checklists. The requisite new combinations are *Pseudosagedia cestrensis* (Michener) R. C. Harris, *Pseudosagedia crocynioides* (R. C. Harris) R. C. Harris, *Pseudosagedia isidiata* (R. C. Harris) R. C. Harris, and *Pseudosagedia raphidosperma* (Müll. Arg.) R. C. Harris

In 1995 I concluded that ascomatal setae were not sufficient to distinguish setose taxa from non-setose taxa at the generic level in those species of *Porina* Acharius s. lat. with *Pseudosagedia*-violet in the ascomatal wall, and consequently took up *Trichothelium* Müll. Arg. for both, an extremely unpopular decision. (Pros and cons of splitting *Porina* may be reviewed in Hafellner & Kalb, 1995, Harris, 1995, & McCarthy & Malcolm, 1997.) Since generic level taxonomy without an independent data set (such as a gene tree) is often as much opinion as fact, and since the genus *Pseudosagedia* (Müll. Arg.) M. Choisy has been taken up by a number of recent European checklists (most notably, Hafellner & Türk, 2001, & Santesson et al. 2004), it seems expedient to bring the North American checklist into line with them.

The North American species of *Pseudosagedia* are as follows.

*Pseudosagedia aenea* (Wallroth) Hafellner & Kalb

***Pseudosagedia cestrensis* (Michener) R. C. Harris, *comb. nov.***

*Verrucaria cestrensis* Tuckerman ex Michener in Darlington, Fl. Cestr. ed. 3, p. 452. 1853.

*Pseudosagedia chlorotica* (Acharius) Hafellner & Kalb

***Pseudosagedia crocynioides* (R. C. Harris) R. C. Harris, *comb. nov.***

*Trichothelium crocynioides* R. C. Harris, More Florida Lichens, p. 179. 1995.

*Pseudosagedia guentheri* (Flotow) Hafellner & Kalb

***Pseudosagedia isidiata* (R. C. Harris) R. C. Harris, *comb. nov.***

*Trichothelium isidiatum* R. C. Harris, More Florida Lichens, p. 180. 1995.

*Pseudosagedia linearis* (Leighton) Hafellner & Kalb

*Pseudosagedia nitidula* (Müll. Arg.) Hafellner & Kalb

***Pseudosagedia raphidosperma* (Müll. Arg.) R. C. Harris, *comb. nov.***

*Porina raphidosperma* Müll. Arg., Hedwigia, 34: 35. 1895.

*Pseudosagedia thaxteri* (R. Sant.) Hafellner & Kalb

To be retained in *Trichothelium* s. str.:

*Trichothelium angustisporum* Caceres & Lucking

*Trichothelium epiphyllum* (Müll. Arg.) R. Sant.

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## *Polysporina lapponica* in Southern California

KERRY KNUDSEN<sup>1</sup>

**ABSTRACT.** – The occurrence of *Polysporina lapponica* (Acharius ex Schaeerer) Degelius is reported for Southern California. *Sarcogyne bicolor* H. Magnusson is recognized as a new synonym of *Polysporina lapponica*. The species is discussed as a possible lichenized fungus and as an opportunistic parasite.

*Polysporina lapponica* (Acharius ex Schaeerer) Degelius

*Lecidea lapponica* Schaeerer, Enum. Crit. Lich. Europ. 125, 1850.

*Polysporina lapponica* (Acharius ex Schaeerer) Degelius, Acta R. Soc. Scient. Litt. Gothobur., Bot, 2: 103, 1982.

Syn. nov. *Sarcogyne bicolor* H. Magnusson, Ann. Crypt. Exot., 7:130-131, 1935. TYPE: “With *Acarospora fuscata*”, Ocean Bluffs at Point Dome, Santa Monica Mountains, California, USA.; August.1898; H.E. Hasse s.n. (FH!).

**Additional Synonyms** (after Martellos & Nimis, 2001): *Sarcogyne canasiacensis* (Hue) H. Magnusson; *Polysporina dubia* (H. Magnusson) Vězda; *Sarcogyne dubia* H. Magnusson; *Acarospora lapponica* (Schaeerer) Th. Fries; *Lecidea lapponica* [Acharius ex] Schaeerer; *Acarospora sernanderi* H. Magnusson; *Acarospora silesiaca* H. Magnusson; *Acarospora subfuscescens* var. *sordida* (Wedd.) H. Magnusson; *Acarospora sordida* Wedd.; *Acarospora subfuscescens* (Nylander) H. Magnusson; *Acarospora tromsoensis* Norman; *Acarospora sordida* var. *urbana* H. Magnusson.

*Polysporina lapponica* (Acharius ex Schaeerer) Degelius is currently considered a lichenicolous fungus (Triebel, Rambold & Nash, 1991). Two stages in the development of the relationship of *P. lapponica* to host are recognizable in epilithic thalli.

It is usually collected in the first stage when carbonized *Polysporina* apothecia erupt from the thallus of another species such as an *Acarospora*. At this stage *P. lapponica* exists within the thallus of the host as hyaline prosoplectenchymatous hyphae. This endokaplytic growth form was not recognized until the late 20<sup>th</sup> century (Triebel et al. 1991) and several species were described in Europe based on the different thalli of the hosts on rock or wood (Magnusson 1929).

The key characteristic for determining *P. lapponica* are mature spores in water which measure 4-5.5(-6.0) x 2.0-2.2(-3.0) $\mu$ m. Mature spores were not abundant in specimens I examined and are generally found clumped among paraphyses outside of asci. In the development of the concept of *P. lapponica* there was much confusion about spore size in descriptions of *P. lapponica* and some of the synonyms of *P. lapponica* have spore ranges in the 1-2 $\mu$ m width (Magnusson 1929). Reliance on spore size is important in determining different species of *Polysporina* combined with substrate or growth form because of the general similarity of the carbonized apothecia. In the specimens examined by the author of *P. lapponica* some spores 1.0-1.7 $\mu$ m in width were seen in water but were apparently immature spores released by sectioning. This is the probable source of the discrepancies.

In the second stage of development, the epilithic thalli of the hosts are degraded. *Polysporina lapponica* breaks down the thallus of the host, slowly dissolving the cortex, medulla and algae, and produces a subcorticate transparent gelatinous layer over the host like a sack. The parasitized thallus appears whitish or gray, sometimes vaguely areolate or in clumps eventually reduced to small areas around the apothecia. The degraded medullary plectenchyma of the host can be observed as a matrix through which the abundant hyphae of *P. lapponica* are thick and intricate. Algae are scattered throughout the thallus in small clumps. The

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apothecia of *P. lapponica* erupt from these thalli as they do in the first developmental form of the parasitic process described above and sometimes appear to be immersed or to have a thalline margin. In the English flora the following description at the end of *Polysporina simplex* (Davies) Vězda, applies to this developmental form: "Specimens with ± immersed apothecia on a thick, gray to brown, ±areolate thallus from inland localities in N. England, N. Wales and Scotland, may be parasitic on unidentified (sterile) host" (Purvis et al., 1992). It would be a regression in our conception of *P. lapponica* to consider this second stage of parasitized epilithic thallus as representing an independent existence.

It should be noted at this point that *P. lapponica* is pathogenic to its host.

*Sarcogyne bicolor* H. Magnusson, was described by Magnusson (1935) from a single collection made by Hasse in August, 1898 from the ocean bluffs at Point Dome (modern Point Dume) on the coast in the Santa Monica Mountains in Los Angeles County, California. The holotype (FH!) is on beautiful and unusual white and relatively hard rock (not "farinose white sandstone" as Magnusson reports) with an epilithic *Acarospora* growing among the discontinuous bleached and irregular thallus and black carbonized apothecia of *S. bicolor*. The *Acarospora* is not determined by Magnusson and Hasse's determination as *Acarospora fuscata* (Acharius) Arnold, is wrong. There was not enough material for a completely confident determination of the *Acarospora* but it appears to match a local variation of *Acarospora badiofusca* (Nylander) Th. Fries, but lacking as yet the distinctive development of a thalline margin around an expanded apothecium.

In the English description after the terse protologue Magnusson (1935) described the spores as 2-4 x 1 $\mu$ m. This is smaller than average width of spores in *Polysporina simplex*. The actual size of the mature spores in water of the holotype of *S. bicolor*, which are rare, are ca. 4-5.5 x 2.0-2.3 $\mu$ m.

Magnusson (1935) wrote of the thallus: "Thallus (in the single specimen seen) covering an area 6x4 cm., large, though not continuously, dirty whitish, areolae 0.5-1 mm. large, 0.2-0.4 mm. thick, very irregular in shape, separated by distinct cracks, their surface very uneven, opaque. — Cortex indistinct. Gonidia 8-15 $\mu$  large, in a stratum, 50-60 $\mu$  thick, but gonidia scattered also below the apothecium. Medulla 200-300 $\mu$  thick, somewhat yellowish gray with scattered granules. Hyphae very intricate, difficult to observe."

The thallus of the holotype is a white epilithic crust that appears more like melted wax than his description of an "areolate" thallus. It is "irregular" "the surface very uneven," indeterminate and discontinuous. It is sub-areolate at best and the "sub-areoles" are even imbricate. The thallus is subcorticate. The medulla contains intricate hyphae in an opaque and whitish matrix mixed with abundant crystals and scattered clusters of algae rather than the continuous layer that Magnusson reported. The medullary plectenchyma of the *Acarospora* on the holotype showed a similarity of structure with the matrix of the *S. bicolor* thallus though degraded. Algal cells were the same range, about 7-14 microns in diameter, in the *S. bicolor* thallus and the *Acarospora* squamules.

My conclusion is that *Sarcogyne bicolor* is the second stage of the process of parasitic development of the endokaplyic *P. lapponica* in the epilithic thallus of an *Acarospora*. *Sarcogyne bicolor* H. Magnusson, is a new synonym of *Polysporina lapponica*.

Though not currently reported from California (S.C. Tucker, per. comm.) this represents the first report of *P. lapponica*. I made further collections of *P. lapponica* in Riverside, San Diego, and Los Angeles Counties. J.C. Lendemer collected *P. lapponica* in San Diego County in Laguna Mountains. It appears to be localized and more reports are expected.

*Polysporina lapponica* is considered an endokaplic lichenicolous fungus but the species concept is still in development (Triebel et al. 1991).

The collection Knudsen 1318 (FH, NY) may be specimens of free-living *P. lapponica*. The thalli are chasmolithic and the areolate thallus is distinct. The subcortex and medulla are colorless, with a medulla of prosoplectenchyma woven around soft sandstone particles running horizontal to the substrate surface in a clear matrix and there are scattered clumps of lichenized algae not occurring in a well-formed stratum. It should be noted that at Torrey Pines in San Diego County where *P. lapponica* was collected usually endolithic *Lecidea laboriosa* Müll. Arg., and the chasmolithic *Buellia sequax* (Nylander) Zahlbruckner, were common.

Based on these specimens, it is possible that *Polysporina lapponica* is a lichenized fungus, adapted for chasmolithic growth in soft sandstone and decomposing granite. Its intricate hyphae of prosoplectenchyma, which can form a stable thallus in eroding substrates, is apparently able to penetrate the thalli of chasmolithic and endolithic lichens as an opportunistic parasite and continue on to find other hosts. If this is *P. lapponica*'s primary niche, a pathogenic relationship to host would not be limiting.

*P. lapponica* could also develop as an endokaplyic fungus when spores are lodged on the thallus of a host and could on porous or weathered rock move from host into the substrate to independent existence and to seek other hosts.

Whether it is lichenized or not, *P. lapponica* produces abundant apothecia.

At this moment in the evolutionary history of *P. lapponica*, if it has the ability to lichenize algae, it is not possible to decide whether we are witnessing a processional stage in the loss of lichenization or toward

lichenization. But because of its distribution in at least Europe and North America it is likely we are witnessing a stable species. If it is lichenized and is not an obligatory parasite, this versatility would give *Polysporina lapponica* the advantage of not having to develop stable non-pathogenic relations with its hosts, becoming host specific, as well as the capacity to seek out hosts as a chasmolithic lichen without being totally dependent on hosts for its survival and reproduction.

I hope the examination of further collections and specimens will answer the question of whether the occurrence of *Polysporina lapponica* as a chasmolithic lichenized fungus is a verifiable observation and whether this free-living form exists in other parts of its range.

*Additional Specimens Examined:* USA. CALIFORNIA. Los Angeles Co.: Santa Monica Mountains,

Topanga, Canyon, Ed Edelman Park, 34° 07.323'N, 118° 35.148'W, 375 m., on sandstone and *Acarospora obpallens*, in full sun, mixed chaparral with coastal sage scrub, 15.August.2004, Knudsen 1552 & Sager (H, UCR, hb. Bungartz). Riverside Co.: Wildomar, Menifee Hills, 33° 37.019'N, 117° 13.997'W, 634 m., granite rocks in rubble on hillside with western exposure, chamise chaparral, 17.July.2004, Knudsen 1434 (UCR). San Diego Co.: Cleveland National Forest, upper portion of Scove Canyon, along abandoned section of Sunrise Highway, 32° 49' 42"N, 116° 29' 44"W, ca. 4600 ft., shale cliffside, Lendemer 2852 & Knudsen (hb. Lendemer); Torrey Pines, 32° 55.110'N, 117° 15.250'W, 92 m., sandstone rocks on east-facing slope, maritime chaparral, 1.July.2004, Knudsen 1318 (FH, NY). WYOMING. Fremont Co.: Wind River Range, Shoshone National Forest, along Stough Creek Lakes Trail, 42° 41'N, 109° 01'W, ca. 3000 m, "on *Candelariella* sp. (scarce!)" (D. Triebel & G. Rambold, 1991 annotation), on granite at Stough Pass, 24.July.1983, Nash 21,397 (ASU).

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# Contributions to the Lichen Flora of Pennsylvania: The Lichen Flora of the Diabase Region of Northern Bucks and Montgomery Counties

JAMES C. LENDEMER

**ABSTRACT.** – This preliminary checklist of lichens and lichenicolous fungi occurring in the diabase region of northern Bucks and Montgomery Counties, Pennsylvania, USA, includes a total of 72 taxa, of which ten have not previously been reported from the state. The range of *Lecanora oreinoides* (Körber) Hertel & Rambold, is extended to include Connecticut, Massachusetts, and Pennsylvania.

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## INTRODUCTION

The lichen flora of Pennsylvania, though under study for more than two centuries, remains poorly documented and understood. I recently began large-scale inventories in eastern Pennsylvania in an effort to increase knowledge of its lichen flora (Lendemer, 2004). Now, in conjunction with floristic inventories of A. Rhoads and T. Block, I conducted an inventory of the lichens growing in the diabase region of northern Bucks and Montgomery Counties, in southeastern Pennsylvania.

This diabase region is confined to portions of upper Bucks and Montgomery Counties, Pennsylvania, where extensive diabase (igneous rock) outcrops (or remnants) occur (Inners, undated). The natural properties of diabase, such as strong resistance to natural weathering and human alteration, coupled with the abundance of rock, have resulted in little human impact on these forests in comparison to the surrounding areas, which are primarily underlain by Triassic shales of the Newark Supergroup<sup>1</sup>.

## MATERIALS AND METHODS

The checklist presented here is the result of several trips by A. Rhoads and me the study area in 2004. An additional trip to Nockamixon State Park by R. Lendemer and me are also included. Several collections made outside the diabase region in Nockamixon State Park are also included as an appendix for completeness.

Data for each locality visited are given below, followed by the abbreviation used in the checklist and a short discussion of the habitat:

**Fulshaw Craeg Preserve, Montgomery Co. (FCP)** – The Fulshaw Craeg Preserve includes a large portion of the Ridge Creek Valley in northern Montgomery County, and was visited on two separate occasions by J. Lendemer and A. Rhoads. Because each collecting trip focused on a different part of the preserve each portion is treated separately:

**FCPI** - Open diabase boulder-field with sparse birch (*Betula*) and ash (*Fraxinus*) and surrounded by a forest of birch, ash, red maple (*Acer rubrum*), and basswood (*Tilia*); just east of King Road, ca. ½ mile north of intersection of King Road & Camp Road, Fulshaw Craeg Preserve (Natural Lands Trust), north of Sumneytown, Salford Township.

**FCPII** - Rocky diabase forest (*Acer*, *Fraxinus*, *Liriodendron*) on the north slope of the Ridge

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<sup>1</sup> The term “Newark Supergroup” is used here in the sense of Bock (1969) as a collective term for the Triassic age strata that occur throughout eastern North America.

Creek Valley along the north shore of Ridge Creek, west side of King Road, ca. ½ mile north of intersection of King Road & Camp Road, Fulshaw Craeg Preserve (Natural Lands Trust), north of Sumneytown, Salford Township.

The forested slopes of the valley, which are primarily composed of deciduous forests, were sparsely settled historically and at present remain relatively undisturbed. The boulder field on a north-facing slope in a sugar maple (*Acer saccharum*) – basswood (*Tilia americana*) forest (cf. Fike, 1999) is particularly noteworthy for its lichen diversity, which is likely due to the fact that the forest has apparently not been extensively disturbed and the boulder field itself is not heavily visited. Thus there is relatively little human impact on the saxicolous lichens growing there. Interesting discoveries from the preserve including populations of *Arthonia helvola* (Nylander) Nylander, and *Parmelia neodiscordans* Hale.

**Nockamixon State Park, Bucks Co. (NSP)** – Nockamixon State Park encompasses two distinct geological regions. The lower (southeastern) portions of the park are underlain by Triassic shales of the Newark Supergroup, but the upper (northwestern) portions of the park lie within the diabase region, and include large expanses of northern hardwood forest with abundant diabase outcroppings. The parts of the park within the diabase region were visited on three separate occasions by J. Lendemer and A. Rhoads and were the focus of an additional trip by R. Lendemer and me. Interestingly, though most of the field work for this survey was carried out within the park, the overall diversity of lichen species was considerably less than that of Fulshaw Craeg Preserve. The specific collecting sites are as follows:

**NSPI** – A mixed hardwood forest of *Acer*, *Quercus*, *Nyssa*, and *Fraxinus* with abundant diabase boulders, along a small tributary to Tohickon Creek, east of Tohickon Creek, north of a parking area at the terminus of Camp Trail Road, north of PA Route #563, ca. 4 miles southeast of Quakertown, Nockamixon State Park.

**NSPII** – A mixed hardwood forest of *Acer*, *Quercus*, *Nyssa*, and *Fraxinus* with abundant diabase boulders and a small stream, west of Sawmill Road, north of PA Route #563, ca. 4 miles southeast of Quakertown, Nockamixon State Park

**NSPIII** – A moist rocky stream valley with abundant mossy diabase boulders and a forest of *Acer*, *Fraxinus*, *Liriodendron*, etc., along a small tributary to the Tohickon Creek, south of PA Route #563, east of Kellers Church.

**NSPIV** – A small diabase boulder field in a rocky forest with *Acer*, *Fraxinus*, *Liriodendron*, etc., with abundant diabase boulders, along a small tributary to the Tohickon Creek with abundant mosses and hepatics, as well as *Dermatocarpon luridum*, south of PA Route #563, north of Kellers Church.

**NSPV** – A forest with *Acer*, *Fraxinus*, *Liriodendron*, etc., with abundant diabase boulders, along a small tributary to the Tohickon Creek with abundant mosses and hepatics as well as *Dermatocarpon*, north of PA Route #563, north of Kellers Church.

## ANNOTATED CHECKLIST

This checklist is arranged alphabetically by genus and species and includes material that could only be identified to genus. Unnamed sterile sorediate crusts, grouped by chemistry, are also included at the end; while sterile sorediate crusts for which names could be found are integrated into the list. Though lichenicolous fungi were not actively sought, several that were found are included in the checklist (indicated by an asterisk).

The collection numbers (*italicized*) given are those of the author (J.C. Lendemer) and follow the locality abbreviations defined above. All taxa reported here are based on voucher specimens deposited in the herbarium of the author (hb. Lendemer), with a nearly complete set of duplicates in the herbarium of the New York Botanical Garden (NY). Since all reports are based on vouchers, taxa that were not vouchered are not included. Sterile or moribund specimens of common taxa (*Acarospora fuscata*, *Porpidia albocaerulescens*, etc.) were discarded. The nomenclature presented here generally follows Esslinger

(1997), with a few exceptions. For example, the use of *Pseudosagedia* Hafellner & Kalb for the species previously referred to *Trichothelium sensu* R.C. Harris, follows Harris (2005).

*Acarospora fuscata* (Acharius) Arnold – FCPII, 2169; NSPI, 1987.

*Agonimia* sp. – FCPI, 1888; NSPI, 1976.

*Agonimia* sp. (?) – NSPI, 1975.

This saxicolous collection is problematic in several respects and further study is needed to determine if it is best placed elsewhere.

*Amandinea polyspora* (Willey) Lay & P. May – NSPIII, 2142.

*Arthonia helvola* (Nylander) Nylander – FCPI, 1896.

*Anaptychia palmulata* (Michaux) Vainio – FCPI, 1848; FCPII, 2152; NSPI, 1955, 1958.

*Bacidia schweinitzii* (Fries ex Michener) Schneider – FCPI, 1895.

*Bacidina* sp. – NSPI, 1988 (pycnidia only).

*Bacidina* sp. – NSPIII, 2336.

*Biatora longispora* (Degelius) Lendemer & Printzen – FCPI, 1890; NSPII, 1971; NSPIII, 2332.

*Biatora printzenii* Tønsberg – FCPI, 1874, 1875; FCPII, 2155, 2184; NSPI, 2122; NSPIII, 2127.

All collections of *B. printzenii* reported here are sterile.

*Caloplaca sideritis* (Tuckerman) Zahlbruckner – NSPI, 1991.

*Candelariella efflorescens* R.C. Harris & Buck – FCPI, 1891.

*Cladonia apodocarpa* Robbins – FCPI, 2179.

*Cladonia petrophila* R.C. Harris – FCPII, 2143, 2144, 2145.

*Coenogonium pineti* (Acharius) ined. – NSPIII, 2338.

*Collema subflaccidum* Degelius – FCPI, 1887, 1889; NSPI, 1963; NSPIII, 2104; NSPIV, 2118; NSPV, 2117.

*Dactylospora pertusariicola* (Willey ex Tuckerman) Hafellner\* – NSPIII, 2137 (on *Pertusaria plittiana*).

*Dermatocarpon luridum* (Withering) J.R. Laundon – NSPI, 1982; NSPIII, 2107.

*Endocarpon* sp. – FCPII, 2173.

This collection is similar to *E. pallidulum* (Nylander) Nylander in having overlapping squamules with a black underside, but differs in having larger ascospores (36-39 x 16-20 $\mu$ m) and apparently larger hymenial algae.

*Fellhanera* sp. 2 – NSPIII, 2139, 2140.

This taxon is apparently undescribed. It will be described in another publication.

*Flavoparmelia baltimorensis* (Gyelnik & Fóriß) Hale – FCPI, 1849; FCPII, 2157; NSPI, 1956; NSPV, 2116.

*Heterodermia speciosa* (Wulfen) Trevisan – FCPI, 1860; NSPV, 2120.

*Lecanora oreinoides* (Körber) Hertel & Rambold – FCPI, 1883.

This record extends the range mapped by Brodo et al. (2001) northward. Several additional collections are also reported here<sup>2</sup>.

*Lecanora strobilina* (Sprengel) Kieffer – FCPI, 1892.

*Lecanora thysanophora* R.C. Harris – FCPI, 1844; FCPII, 2154.

*Lecidea berengeriana* (A. Massalongo) Nylander – FCPI, 1879.

*Lepraria* sp. (?) (TLC: unknown [bright UV+ yellow], usnic acid) - FCPI, 1873.

*Lepraria* sp. (TLC: pannarin?, zeorin) – FCPII, 2183.

*Lepraria* sp. (TLC: xanthone?, usnic acid) – FCPII, 2181.

*Lepraria caesiella* R.C. Harris in Lendemer – NSPIII, 2128.

*Lepraria lobificans* Nylander – FCPI, 1867, 1870, 1876; NSPI, 1967, 1968; NSPIII, 2129; NSPV, 2398.

*Lepraria normandinoides* ined. – FCPI, 1868; FCPII, 2182; NSPI, 1964, 1965, 1966.

The above unpublished name should be applied to *Lepraria* sp. (protocetraric/fumarprotocetraric acid) of Harris (2004). The taxonomic status with respect to other taxa with similar chemistries is currently under study.

*Lepraria vouauxii* (Hue) R.C. Harris – NSPV, 2131.

*Leptogium cyanescens* (Körber) Rabenhorst – FCPI, 1847, 1863.

*Leptogium dactylinum* Tuckerman – FCPII, 2160, 2166; NSPI, 1992; NSPIII, 2110.

<sup>2</sup> USA. CONNECTICUT. Ellsworth, H.A. Green s.n. (NY), 21.August.1889. MASSACHUSETTS.

Wellesley, Cummings s.n. (NY), April.1884. Nantasket, *sine coll.* (NY).

*Loxospora pustulata* (Brodo & Culberson) R.C. Harris – FCPI, 1852, 1866.  
*Melaspilea* sp. s. lat. – FCPII, 2174.  
*Micarea peliocarpa* (Anzi) Coppins & R. Santesson – FCPI, 1878; FCPII, 2171.  
*Mycobilimbia ahlesii* (Körber) ined. - FCPII, 2167.  
*Myelochroa aurulenta* (Tuckerman) Elix & Hale – FCPI, 1846, 1853; FCPII, 2156, 2159; NSPI, 1953, 1959; NSPIII, 2105, 2113; NSPIV, 2119.  
*Myelochroa obsessa* (Acharius) Elix & Hale – FCPI, 1877.  
*Nadvornikia sorediata* R.C. Harris – NSPI, 1969, 1976.  
*Parmelia neodiscordans* Hale – FCPI, 1869.  
*Peltigera praetextata* (Flörke ex Sommerfelt) Zopf – NSPI, 1983.  
*Pertusaria globularis* (Acharius) Tuckerman – FCPI, 1865; FCPII, 2150; NSPI, 1960.  
*Pertusaria plittiana* Erichsen – FCPI, 1893; NSPIII, 2138.  
*Pertusaria velata* (Turner) Nylander – FCPI, 1857.  
*Phaeophyscia adiastola* (Esslinger) Esslinger – FCPI, 1851, 1854, 1855, 1861, 1862, 1884, 1885; FCPII, 2147, 2148, 2149; NSPI, 1980, 1957, 1985, 1989; NSPII, 1981; NSPIII, 2114.  
*Phaeophyscia rubropulchra* (Degelius) Esslinger – FCPI, 1850; FCPII, 2162; NCPI, 1978; NSPIII, 2103, 2106; NSPV, 2134.  
*Phlyctis* sp.– FCPI, 1858, 1859; FCPII, 2111, 2146; NSPI, 1962; NSPIV, 2115.  
This taxon is common in the region and was reported from New York by Harris (2004).  
*Physcia millegrana* Degelius – NSPIII, 2112; NSPIV, 2121.  
*Physcia phaea* (Tuckerman) J.W. Thomson – FCPII, 2158, 2164; NSPIII, 2109.  
*Physcia pseudospeciosa* J.W. Thomson – FCPII, 2151.  
*Physcia subtilis* Degelius – FCPII, 2163.  
*Porpidia albocaerulescens* (Wulff) Hertel & Knoph – FCPI, 1880, 1881, 1882; NSPI, 1986.  
Lendemer (2004b) placed *Lecidea hebescens* Nylander in synonymy with *P. albocaerulescens*, noting the only difference to be the brown coloration of the thallus in *L. hebescens*. During the course of this study many thalli of *P. albocaerulescens* were encountered with brown coloration like the type material of *L. hebescens*. These thalli differ from those of typical *P. albocaerulescens* (i.e. with blue-gray coloration) only in color and, semi-diligent searching revealed thalli with both types of coloration present.  
*Pseudosagedia cestrense* (Tuckerman ex Michener) R.C. Harris – FCPII, 2175; NSPI, 1972, 1974.  
This species was previously reported from Pennsylvania by McGrath (1991) as *Porina pulla* (Acharius) Müll. Arg.  
*Pseudosagedia guentheri* (Flörke) Hafellner & Kalb – FCPII, 2172.  
The collection cited above is a good example of the problems involving the taxonomy of the *P. cestrense* group as little more than the substrate seems to separate it from corticolous *P. cestrense*.  
*Punctelia rufecta* (Acharius) Krog – FCPI, 1845; NSPIII, 2108.  
*Punctelia subrudecta* auct. Amer. – NSPI, 1954.  
*Pyrenidium cf. actinellum* Nylander\* (on *Acarospora fuscata*) – FCPII, 2168.  
*Pyxine sorediata* (Acharius) Montagne – FCPI, 1898.  
*Ramalina petrina* Bowler & Rundel – FCPI, 1886.  
*Rinodina oxydata* (A. Massalongo) A. Massalongo s. lat. – NSPI, 1990.  
I recently reported *R. vezdae* from Pennsylvania and Maryland. Comparing the specimens to the protologue of *R. vezdae* (Mayrhofer, 1984) the spores ((15)-18-22 x (8)-10-12µm) do not fit the range reported for *R. vezdae* (22-29 x 9-15µm). Since little more than spore size seems to separate *R. oxydata* and *R. vezdae* the material is referred to *R. oxydata* pending further study.  
*Scoliosporum umbrinum* (Acharius) Arnold – FCPI, 1897.  
*Staurothele diffractella* (Nylander) Tuckerman – NSPIII, 2141.  
*Stereocaulon saxatile* H. Magnusson – FCPI, 1871, 1872.  
*Trapelia placodioides* Coppins & P. James – NSPI, 1961 (shade form?).  
*Trapeliopsis flexuosa* (Fries) Coppins & P. James – FCPII, 2177.  
*Verrucaria* sp. – NSPI, 1973.  
*Xanthoparmelia conspersa* (Ehrhart ex Acharius) Hale – NSPV, 2135.  
*Xanthoparmelia somloënsis* (Gyelnik) Hale – FCPI, 1856, 1864.  
sterile sorediate crustose sp. (TLC: no substances) – NSPIII, 2133.  
sterile sorediate crustose sp. (TLC: no substances) – FCPII: 2178.

sterile sorediate crustose sp. (TLC: atranorin, zeorin, stictic acid agg.) – NSPIII, 2132.  
sterile sorediate crustose sp. (TLC: unknowns (trace)) – FCPII, 2161.

## DISCUSSION

This checklist of lichens and lichenicolous fungi occurring in the diabase region of southeastern Pennsylvania presently includes 72 taxa, few of which had previously been reported from the region (McGrath, 1991). Though further work will undoubtedly result in additions to the checklist, these will likely be in often overlooked groups, since the taxa present in each locality do not differ significantly.

Perhaps the most interesting conclusion that can be drawn from this study is that the affinities of the lichen flora of the diabase region do not strongly correspond to those of the vascular plant flora (A. Rhoads unpublished), in that they do not include elements that are generally restricted to several other specific habitat types (i.e. serpentine barrens). Thus, the majority of lichen species occurring in the diabase region are typical of northern Appalachian forests. Taxa more common in the southern Appalachians are also present, however.

Several records presented here are of particular interest because they represent rarely collected taxa (*Arthonia helvola*, *Lepraria vouauxii*, *Physcia pseudospeciosa*, and *Parmelia neodiscordans*). Others apparently represent the first collection of a species in the state since that of the type by G.H.E Muhlenberg in the early 19<sup>th</sup> century (i.e. *Pertusaria globularis*). The report of *Lecanora oreinoides* extends its range northward from that mapped by Brodo et al. (2001). The reports of *Nadvornikia sorediata* serve to fill in the gaps in the northern distribution of that species, which was first described from Florida (including a paratype from Delaware) by Harris (1990) and subsequently reported from New Jersey by Lendemer (2004a) and New York by Harris (2004).

Of the taxa reported here, the following apparently represent the first report for Bucks (B) or Montgomery (M) Counties: *Acarospora fuscata* (B, M), *Amandinea polyspora* (B), *Arthonia helvola* (M), *Anaptychia palmulata* (B, M), *Biatora longispora* (B, M), *B. printzenii* (B, M), *Caloplaca sideritis* (B), *Candelariella efflorescens* (M), *Cladonia petrophila* (M), *Collema subflaccidum* (B, M), *Dactylospora pertusariicola* (B), *Flavoparmelia baltimorensis* (B, M), *Heterodermia speciosa* (M), *Lecanora oreinoides* (M), *Lecanora strobilina* (M), *Lecanora thysanophora* (M), *Lecidea berengeriana* (M), *Lepraria lobificans* (B, M), *Lepraria vouauxii* (B), *Leptogium dactylinum* (B, M), *Loxospora pustulata* (M), *Micarea peliocarpa* (M), *Myelochroa aurulenta* (B, M), *M. obsessa* (M), *Nadvornikia sorediata* (B), *Parmelia neodiscordans* (M), *Pertusaria globularis* (B, M), *P. plittiana* (B, M), *Phaeophyscia adiastola* (B, M), *P. rubropulchra* (B), *Physcia phaea* (B, M), *P. pseudospeciosa* (M), *P. subtilis* (M), *Pseudosagedia cestrense* (B, M), *Punctelia rufecta* (B, M), *P. subrudecta* auct. Amer. (B), *Ramalina petrina* (M), *Rinodina oxydata* s. lat. (B), *Scoliciosporum umbrinum* (M), *Staurothele diffractella* (B), *Trapelia placodioides* (B), *Trapeliopsis flexuosa* (M), *Xanthoparmelia conspersa* (B), and *X. somloënsis* (M).

Of the above taxa, the following are reported for the first time from Pennsylvania: *Arthonia helvola*, *Biatora printzenii*, *Caloplaca sideritis*, *Collema subflaccidum*, *Dactylospora pertusariicola*, *Lecanora oreinoides*, *Lepraria vouauxii*, *Nadvornikia sorediata*, *Pertusaria plittiana*, *Physcia pseudospeciosa*, *Ramalina petrina*, and *Staurothele diffractella*.

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I wish to thank A. Rhoads for facilitating much of the field work for this study, as well as R.C. Harris for his constant help in determining/confirming problem specimens and performing TLC on the sterile sorediate crusts. P. Diederich determined the lichenicolous fungi. And, R Dirig and R.C. Harris for reviewing the manuscript.

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## APPENDIX

Lichens were also collected by the author and A. Rhoads at two additional localities in Nockamixon State Park, which were outside the diabase region. The records are included below for completeness.

**Vicinity of Sentinel Rock, Nockamixon State Park, Bucks Co. (NSPVI)** – Erosional remnants including Sentinel Rock in a conifer-dominated forest on a south-facing slope, on the north/east shore of the Tohickon Creek, northeast of Kellers Church.

**Unnamed red shale cliffs, Nockamixon State Park, Bucks Co. (NSPVII)** – Red shale, west-facing cliffs with a forest, on the north/east shore of the Tohickon Creek, northeast of Kellers Church.

*Dermatocarpon americanum* Vainio – NSPVII, 2124.  
*Leptogium dactylinum* Tuckerman – NSPVII, 2123.  
*Leptogium lichenoides* (L.) Zahlbruckner – NSPVII, 2136.  
*Lepraria lobificans* Nylander – NSPVII, 2130.  
*Phaeophyscia adiastola* (Esslinger) Esslinger – NSPVII, 2126.  
*Rinodina oxydata* (A. Massalongo) A. Massalongo s. lat. – NSPVII, 2170.  
*Xanthoparmelia subramigera* (Gyelnik) Hale – NSPVI, 2125.

# Lichens of the Santa Monica Mountains, Part One

KERRY KNUDSEN<sup>1</sup>

**ABSTRACT.** – 63 taxa are reported from the Santa Monica Mountains in southern California. *Endocarpon pseudosubnitescens* Breuss is reported as new to North America. New collections of the rare species *Cladonia pulvinella* Hammer and *Placynthiella knudsenii* Lendemer are reported. *Acarospora arenosa* Herre, *Acarospora smaragdula* (Wahlenberg) A. Massalongo var. *smaragdula*, *Lecanora glaucopsina* Nylander in Hasse, and *Lecidea subplebeia* Nylander in Hasse are discussed. Two new combinations are made: *Mycobilimbia austrocalifornica* (Zahlbruckner) Knudsen, and *Sarcogyne arenosa* (Herre) Knudsen & Standley. *Acarospora craterifolia* H. Magnusson is synonomized with *Acarospora smaragdula* var. *smaragdula*, and *Acarospora carnegiei* Zahlbruckner is synonomized with *Acarospora obpallens* (Nylander in Hasse) Zahlbruckner. Lectotypes are selected for the following names: *Acarospora arenosa* Herre, *Lecanora obpallens* Nylander in Hasse, and *Lecidea subplebeia* Nylander in Hasse.

## INTRODUCTION

The Santa Monica Mountains of southern California extend about 45 miles from the Los Angles River in the city of Los Angeles to the city of Santa Monica and continue along the Pacific coast into eastern Ventura County. They range from 3 to 13 miles wide with elevations from sea level to 3111 feet at Sandstone Peak in the western mountains. The native vegetation of coastal sage scrub, chaparral and oak woodlands is still largely intact. Rock substrates include sandstone, rhyolite, volcanics, and scattered occurrences of shale. (Raven 1986)

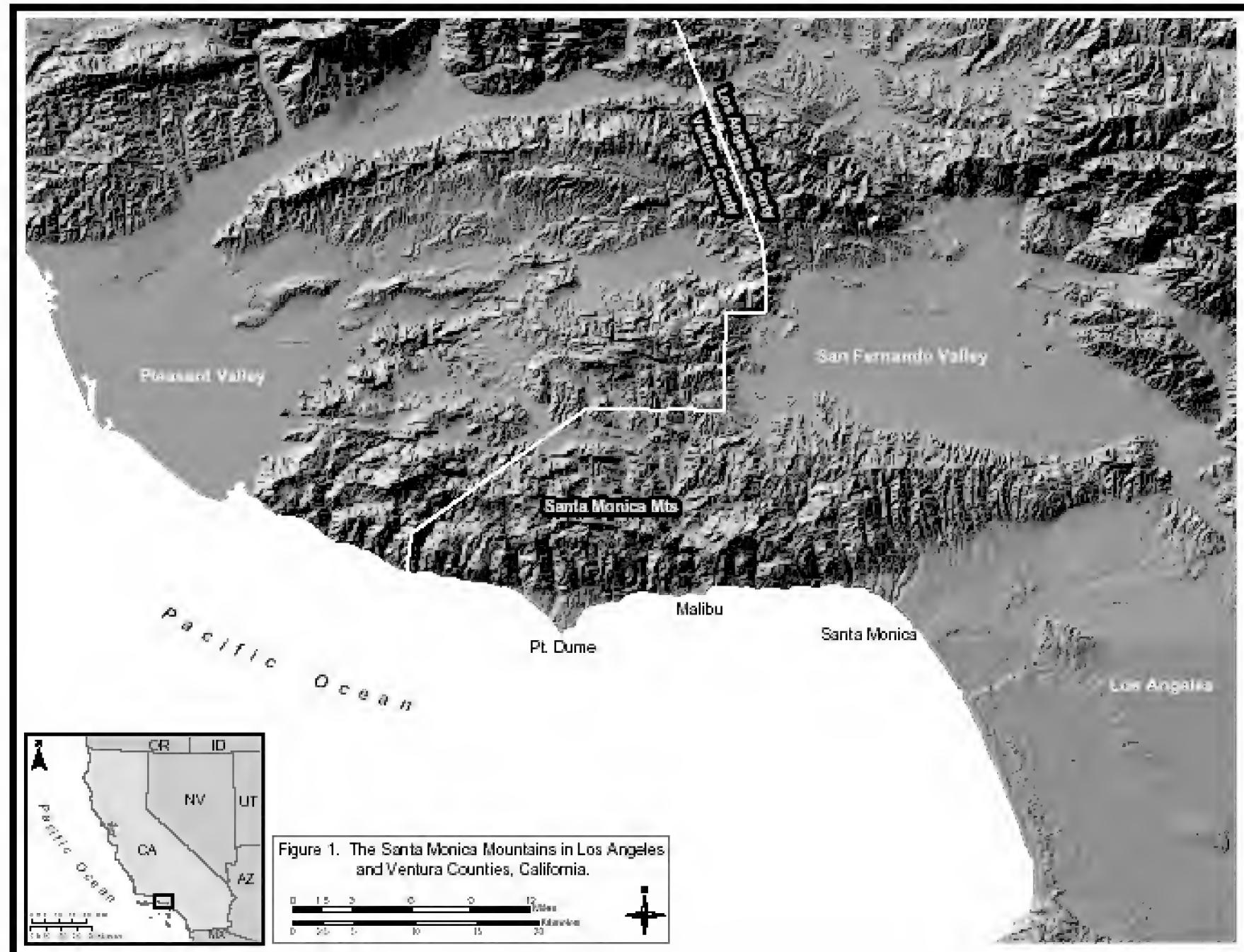
The lichens of the Santa Monica Mountains were collected by Hermann Hasse for over 25 years until his death in 1915. These collections form the basis of his *Lichen Flora of southern California* (1913). Hasse reported over two hundred species for the Santa Monica Mountains (1913). The exact number is impossible to estimate because of the way distribution information is written in the flora. For instance, the San Fernando Valley as used by Hasse may actually refer to the inland side of Santa Monica Mountains and references to species common throughout southern California may not include the Santa Monica Mountains. The majority of Hasse's collections are in the Farlow Herbarium (FH) and in the Herbarium of the New York Botanical Gardens (NY) with type material in the Nylander herbarium in Helsinki (H-NYL) and in Austria (W). The Hasse collections in the Herbarium of the University of Minnesota (MIN) are exceptional containing many valuable types. Many other herbaria contain important types and collections, including PH, US. I assume many of Hasse's collections were made in areas developed during the expansion of the city of Santa Monica into the foothills of the Santa Monica Mountains. These locations are usually designated on labels by Hasse as "near Old Soldier's Home" or "in the foothills of Santa Monica Mountains".

Hasse's collections give us a historic record of the lichen flora of the Santa Monica Mountains before urbanization of Los Angeles altered it through the impacts from human development, invasive weeds, air pollution, and increasing anthropogenic fire occurrences. The mountains from Topanga Canyon to its foothills in the city of Santa Monica are the type locality of many species described by Nylander, who studied Hasse's collections fresh from the field in the 1890's. Because of the transformation of southern California in the 20th century, some species reported in Hasse's flora have not been collected since his death. The habitats of these species are no doubt reduced and altered. But these lost species cannot be presumed to be extinct.

Many lichenologists have collected in the Santa Monica Mountains Recreation Area, including Bjorn Owe-Larsson (UPS), Bruce Ryan (ASU), William Weber (COLO), and Clifford Wetmore (MIN). Due to the extensive area of the range and many problems of access, the Santa Monica Mountains Recreation Area has not been exhaustively explored since Hasse. And Hasse may have not explored many areas west of Malibu Canyon.

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**Fig. 1.** Map of the Santa Monica Mountains in Los Angeles and Venture Counties, California, USA.



My collections in this paper were made exclusively in the Santa Monica Mountains Recreational Area as understood by the National Park Service. It includes in a cooperative union, federal, state, and local park agencies with private reserves and landowners west of the city of Santa Monica. It does not include the whole natural range whose eastern portion is on the other side of Sepulveda Canyon where it is often called locally the Hollywood Hills. Many of Hasse's collections may not have been made in the Santa Monica National Recreation Area.

In fall of 2003, I began a series of irregular visits that will be continued over many years to come. The goal of these trips have to been to explore in depth many areas and substrates. The main focus of the collections reported here have been sandstone outcrops and terricolous habitats scattered across the range. Most specimens of all species are deposited in the UCR herbarium (<http://www.herbarium.ucr.edu/Herbarium.html>). Additional collections of some species and duplicates are deposited primarily in ASU, H, MIN, hb. Lendemer. Duplicates of most Verrucariales are deposited with Othmar Breuss. The nomenclature follows *Lichen-forming and lichenicolous fungi of Fennoscandia* by Rolf Santesson et al (2004) and *The Lichen Flora of the Greater Sonoran Desert Region*, Vol. 1 & 2, edited by Nash et al (2002 and 2004). Those species described by Nylander but only reported by Hasse are treated as Nylander in Hasse in my nomenclature.

## COLLECTIONS

### *Acarospora bullata* Anzi

**USA. CALIFORNIA. LOS ANGELES CO.:** Hepatic Gulch, near Schueren Road, on sandstone on north side of ridge,  $34^{\circ} 04.693'N$   $118^{\circ} 38.653'W$ , elev. 682 m., Knudsen et al. 661 (ASU, MIN).

### *Acarospora cinereoalba* (Fink) H. Magnusson

**USA. CALIFORNIA. LOS ANGELES CO.:** Latigo Canyon, on edges of shale on north slope in oak woodland,  $34^{\circ} 04.832'N$   $118^{\circ} 47.795'W$ , elev. 571 m., Knudsen 1583 (ASU, MIN, UCR, hb. Lendemer).

### *Acarospora fuscata* (Nylander) Arnold

**USA. CALIFORNIA. LOS ANGELES CO.:** Calabasas Peak Motorway, on sandstone outcrops surrounded by mixed chaparral in full sun, east-west exposure, growing with *Acarospora obpallens*,  $34^{\circ} 06.390'N$   $118^{\circ} 39.089'W$ , elev. 474 m., Knudsen 700 & Sagar (ASU, UCR); Castro Crest, on sandstone of north side of outcrops,  $34^{\circ} 04.864'N$   $118^{\circ} 45.104'W$ , elev. 643 m., Knudsen 715 & Sagar (MIN). – *A. fuscata* is relatively rare in southern California and most easily found in watershed areas at higher elevations.

### *Acarospora obpallens* (Nylander in Hasse) Zahlbruckner

**USA. CALIFORNIA. LOS ANGELES CO.:** Calabasas Peak Motorway, on sandstone outcrops,  $34^{\circ} 06.390'N$   $118^{\circ} 39.089'W$ , elev. 474 m., Knudsen 701 & Sagar (ASU); Hepatic Gulch, near Schueren Road, on soil over sandstone on north side of ridge,  $34^{\circ} 04.709'N$   $118^{\circ} 38.684'W$ , elev. 687 m., Knudsen et al. 651 (ASU); Topanga State Park, Cathedral Rock along Backbone Trail, on sandstone,  $34^{\circ} 06.399'N$   $118^{\circ} 33.481'W$ , elev. 631m., Knudsen 348a (MIN, UCR); Topanga Canyon, Ed Edelman Park, on sandstone in full sun,  $34^{\circ} 07.294'N$   $118^{\circ} 35.169'W$ , elev. 375 m., Knudsen 1562 & Sagar, (UCR). – Once common on soil in the Santa Monica Mountains, *A. obpallens* is now restricted to sandstone where it reaches its best development. Magnusson's (1929) report of *Acarospora carnegiei* Zahlbruckner is a misidentification of *A. obpallens*. *Acarospora carnegiei* Zahlbruckner in both Arizona and California is here designated as a synonym of *Acarospora obpallens* (Nylander in Hasse) Zahlbruckner<sup>1</sup>. *A. obpallens* often becomes reduced under stress and this has caused the problems of classification.

### *Acarospora smaragdula* (Wahlenberg) A. Massalongo var. *smaragdula*

**USA. CALIFORNIA. LOS ANGELES CO.:** Latigo Canyon, on edges of shale on north slope in oak woodland,  $34^{\circ} 04.832'N$   $118^{\circ} 47.795'W$ , elev. 571 m., Knudsen 1584 (ASU, MIN, NY, UCR, hb. Lendemer). – This taxon is a parasite on *A. cinereoalba* (Fink) H. Magnusson, *Buellia* species, and in-determined lichens. The species is nitrophilous (Santesson et al, 2004) but I have seen no reports of its parasitic activity from Europe. Some areoles were observed directly growing out of the host. *Acarospora cratericola* H. Magnusson is here synonomized with *Acarospora smaragdula* (Wahlenberg) A. Massalongo var. *smaragdula*<sup>2</sup>. One areole of the holotype of *A. cratericola* can be seen emerging from thallus of a lichen host and Magnusson (1929) describes it as a parasite.

### *Acarospora smaragdula* var. *lesdainii* (Harmand ex A.L. Smith) H. Magnusson

**USA. CALIFORNIA. LOS ANGELES CO.:** Castro Crest, on sandstone outcrop in sun,  $34^{\circ} 04.840'N$   $118^{\circ} 45.136'W$ , elev. 665 m., Knudsen 707 & Sagar; from north side of the same sandstone outcrop Knudsen 709 & Sagar (ASU, FH, H, MIN, UCR, hb. Lendemer), on sandstone in full sun,  $34^{\circ} 04.873'N$   $118^{\circ} 44.905'W$ , elev. 581 m., Knudsen 1572 (UCR). – See Knudsen (2004a)

### *Acarospora socialis* H. Magnusson

**USA. CALIFORNIA. LOS ANGELES CO.:** Agoura, ridge above Cornell Corners, on Conejo volcanics on west-facing slope among coastal sage scrub and invasive weeds,  $34^{\circ} 08.431'N$   $118^{\circ} 45.500'W$ , elev. 301 m. Knudsen 589 & Sagar (ASU, UCR), Knudsen 593 & Sagar (ASU); Topanga Canyon, Ed Edelman Park, on sandstone in full sun,  $34^{\circ} 07.323'N$   $118^{\circ} 35.148'W$ , elev. 375 m., Knudsen 1557 & Sagar (UCR), Knudsen 1558 & Sagar (UCR, hb. Lendemer). – Note Knudsen 1557 is an epruinose specimen intergrading with Knudsen 1558. Topanga Canyon was the type locality of *A. subalbida* H. Magnusson and *A. socialis* is heavily pruinose at this site. Similar specimens were labeled *A. xanthophana* var. *dealbata* by Hasse.

### *Acarospora veronensis* A. Massalongo

**USA. CALIFORNIA. LOS ANGELES CO.:** Agoura, ridge above Cornell Corners, on small stones,  $34^{\circ} 08.237'N$   $118^{\circ} 44.674'W$ , elev. 371 m., Knudsen 600.2 & Sagar (UCR), on small rocks and

pebbles,  $34^{\circ} 08.233'N$   $118^{\circ} 44.662'W$ , elev. 344 m., *Knudsen 608 & Sagar* (UCR); Rocky Oaks Park, on boulder of unknown rock type,  $34^{\circ} 05.840'N$   $118^{\circ} 49.016'W$ , elev. 507 m., *Knudsen 678.1* (UCR).

***Aspicilia glaucopsina* (Nylander in Hasse) Hue**

**USA. CALIFORNIA. VENUTRA CO.:** Thin-soiled Cenozoic surfaces below Sandstone Peak strewn with rubble, on spike moss and soil and *Cladonia* species,  $34^{\circ} 07.266'N$   $118^{\circ} 56.049'W$ , elev. 890 m., *Knudsen 1963 & Owe-Larsson* (UCR, hb. Lendemer) - Note: Collections from the same locality were deposited at UPS by Bjorn Owe-Larsson who will re-describe it in Vol. 3 of the Sonoran flora. This terricolous lichen, lacking any lichen substances (Lendemer, per com.), appears to be related to the *Aspicilia californica*-group but is only sub-fruticose. The type locality in the Santa Monica Mountains, Barton Peak, has not been located. Though I have collected it in other parts of southern California (see material in ASU, NY, UCR) it is rare and usually sterile. Basionym: *Lecanora glaucopsina* Nylander in Hasse.

***Buellia badia* (Fries) A. Massalongo**

**USA. CALIFORNIA. LOS ANGELES CO.:** Hepatic Gulch, near Schueren Road, on sandstone and undetermined lichen,  $34^{\circ} 04.693'N$   $118^{\circ} 38.662'W$ , elev. 700 m., *Knudsen et al. 657* (UCR); Topanga State Park, Cathedral Rock along Backbone Trail, on sandstone and *Acarospora obpallens*,  $34^{\circ} 06.399'N$   $118^{\circ} 33.481'W$ , elev. 631 m., *Knudsen 348b* (ASU, UCR). – See Bungartz, (2004).

***Buellia punctata* (Hoffmann) A. Massalongo s. lat.**

**USA. CALIFORNIA. VENTURA CO.:** Thin-soiled Cenozoic surfaces below Sandstone Peak strewn with rubble, on spike moss, soil and *Aspicilia glaucopsina*,  $34^{\circ} 07.266'N$   $116^{\circ} 56.049'W$ , elev. 890 m., *Knudsen 1963.2 & Owe-Larsson* (UCR, hb. Lendemer). - *Buellia punctata* was observed growing on spike moss; when *Aspicilia glaucopsina* covered the spike moss it grew through or on its thallus. In keeping with the treatment of *Buellia* by F. Bungartz, *Amandinea* is rejected as the correct genus for *B. punctata* (see Sheard (2004: 469), for comment on the handling of the genus in the upcoming work of Bungartz for the Sonoran Lichen Flora, Vol. 3). Without additional taxonomic studies on a much broader scale, it is currently not possible to evaluate if our specimens belong to *Buellia punctata* s. str. Bungartz et al. (2004) examined a large amount of saxicolous specimens previously identified as *B. punctata* from the Sonoran Desert Region. They concluded that none of the material belonged to *Buellia punctata* s. str. Instead six species were distinguished that are very similar, but not identical to *Buellia punctata* s. str. However, the specimen treated here as *Buellia punctata* does not match any of the species described in Bungartz et al. (2004), even though other material has been confirmed as *Buellia Sequa* (see below). According to Bungartz (peers. comm.) typical *Buellia punctata* occurs on bark. Our specimen of *Buellia punctata* was collected on spike moss and shows some parasitic affinity to *Aspicilia glaucopsina*. Nevertheless, the material is clearly distinct from other parasitic species; e.g., *Buellia badia*. With some hesitation we refer the material to *Buellia punctata* s. lat. until a more comprehensive taxonomic study may resolve its true identity.

***Buellia sequax* (Nylander) Zahlbrückner**

**USA. CALIFORNIA. LOS ANGELES CO.:** Agoura, ridge above Cornell Corners, on Conejo volcanics,  $34^{\circ} 08.431'N$   $118^{\circ} 45.500'W$ , elev. 301 m., *Knudsen 590 & Sagar* (UCR), on small stones,  $34^{\circ} 08.237'N$   $118^{\circ} 44.674'W$ , elev. 371 m., *Knudsen 600.1 & Sagar* (UCR).

***Buellia stellulata* (Taylor) Mudd.**

**USA. CALIFORNIA. LOS ANGELES CO.:** Off Kanaan Road in canyon, on unknown rock type, a hard greenish stone, HCl-,  $34^{\circ} 03.641'N$   $118^{\circ} 48.186'W$ , elev. 399 m., *Knudsen 623.2 & Sagar* (UCR).

***Caloplaca arenaria* (Persoon) Müll. Arg.**

**USA. CALIFORNIA. LOS ANGELES CO.:** Zuma Ridge, on sandstone,  $34^{\circ} 04.107'N$   $118^{\circ} 50.009'W$ , elev. 661 m., *Knudsen 802 & Sagar* (UCR).

***Caloplaca bolacina* (Tuckerman) Herre**

**USA. CALIFORNIA. LOS ANGELES CO.:** Agoura, unnamed ridge above Cornell Corners, on lichens and rock,  $34^{\circ} 08.233'N$   $118^{\circ} 44.662'W$ , elev. 344 m., *Knudsen 606.1 & Sagar* (UCR); Off Kanaan Road in canyon, on unknown rock type,  $34^{\circ} 03.641'N$   $118^{\circ} 48.186'W$ , elev. 399 m., *Knudsen 628 & Sagar* (UCR).

***Caloplaca citrina* (Hoffmann) Th. Fries**

**USA. CALIFORNIA. LOS ANGELES CO.:** Royal Oaks Park, on boulder of unknown rock type,  $34^{\circ} 05.840'N$   $118^{\circ} 49.016'W$ , elev. 507 m., *Knudsen 677 & Sagar* (UCR).

***Caloplaca holocarpa* (Hoffmann) Wade**

**USA. CALIFORNIA. LOS ANGELES CO.:** Royal Oaks Park, on oak bark,  $34^{\circ} 05.908'N$   $118^{\circ} 49.007'W$ , elev. 553 m., *Knudsen 997* (UCR).

*Candelariella aurella* (Hoffmann) Zahlbruckner

**USA. CALIFORNIA. LOS ANGELES CO.:** Castro Crest, on sandstone, 34° 04.867'N 118° 44.868'W, elev. 593 m., *Knudsen 1575* (UCR).

*Catillaria franciscana* (Tuckerman) Herre

**USA. CALIFORNIA. LOS ANGELES CO.:** Agoura, ridge above Cornell Corners, on lahar (volcanic ash rock) in Conejo breccia, 34° 08.233'N 118° 44.662'W, elev. 344 m., *Knudsen 606.2 & Sagar* (UCR); Calabasas Peak Motorway, on sandstone outcrops, 34° 06.390'N 118° 39.089'W, elev. 474 m., *Knudsen 704.2 & Sagar* (UCR).

*Cladonia cervicornis* (Acharius) Flotow subsp. *cervicornis*

**USA. CALIFORNIA. LOS ANGELES CO.:** Zuma Ridge, on soil, 34° 05.000'N 118° 49.964'W, elev. 613 m., *Knudsen 811 & Sagar* (UCR).

*Cladonia chlorophaea* (Flörke ex Sommerfelt) Sprengel

**USA. CALIFORNIA. LOS ANGELES CO.:** Off Schueren Road, on soil over sandstone on north side of outcrop, 34° 04.722'N 118° 38.670'W, elev. 683 m., *Knudsen et al. 646.1* (UCR); Castro Ridge, on soil over sandstone, 34° 04.864'N 118° 45.159'W, elev. 665 m., *Knudsen 711 & Sagar* (UCR).

*Cladonia hammeri* Ahti

**USA. CALIFORNIA. LOS ANGELES CO.:** Agoura, ridge above Cornell Corners, on soil of north side of rock outcrop, 34° 08.233'N 118° 44.662'W, elev. 344 m., *Knudsen 607.2 & Sagar* (UCR).

*Cladonia pulvinella* Hammer

**USA. CALIFORNIA. LOS ANGELES CO.:** Topanga State Park, Musch Ranch Trail, On soil bank in shady ravine with mixed chaparral with manzanita, 34° 05.858'N 118° 35.031'W, elev. 338 m., *Knudsen 351* (UCR). – The small numbers of published reports (Hammer 1991, Ahti & Hammer 2002) may not be evidence of true rarity. This specimen was found mixed with *Cladonia chlorophaea* and field-tested with K. It could be easily overlooked.

*Cladonia pyxidata* (L.) Hoffmann

**USA. CALIFORNIA. LOS ANGELES CO.:** Castro Crest, on soil on shaded north slope among mixed chaparral of *Adenostoma fasciculatum* and manzanita, 34° 04.864'N 118° 45.159'W, elev. 665 m., *Knudsen 713 & Sagar* (UCR), on soil in shady drainage with black sage, 34° 04.861'N 118° 45.054'W, elev. 643 m., *Knudsen 71.9 & Sagar* (UCR).

*Cladonia subulata* (L.) F.H. Wiggers

**USA. CALIFORNIA. LOS ANGELES CO.:** Zuma Ridge, on soil, 34° 05.000'N 118° 49.964'W, elev. 613 m., *Knudsen 809 & Sagar* (UCR).

*Diploschistes diacapsis* (Acharius) Lumbsch

**USA. CALIFORNIA. LOS ANGELES CO.:** Hepatic Gulch, near Schueren Road, on soil over sandstone, 34° 04.709'N 118° 38.684'W, elev. 687 m., *Knudsen et al. 650* (UCR).

*Diploschistes muscorum* (Scopoli) R. Santesson

**USA. CALIFORNIA. LOS ANGELES CO.:** Agoura, ridge above Cornell Corners, on *Cladonia* (juvenile), 34° 08.233'N 118° 44.662'W, elev. 344 m., *Knudsen 607.1 & Sagar* (UCR).

*Endocarpon pseudosubnitescens* Breuss

**USA. CALIFORNIA. LOS ANGELES CO.:** Off Kanaan Road in canyon, on unknown rock type, 34° 03.697'N 118° 48.244'W, elev. 400 m., *Knudsen 617 & Sagar* (UCR). - Described from two collections in Baja California (Breuss 2002), this represents the first collection in the United States and was determined by Othmar Breuss.

*Endocarpon pusillum* Hedwig

**USA. CALIFORNIA. LOS ANGELES CO.:** Agoura, ridge above Cornell Corners, on soil, 34° 08.233'N 118° 44.662'W, elev. 344 m., *Knudsen 609 & Sagar* (UCR).

*Lecania brunonis* (Tuckerman) Herre

**USA. CALIFORNIA. LOS ANGELES CO.:** Castro Crest, on sandstone outcrops, 34° 04.127'N 118° 45.127'W, elev. 624 m., *Knudsen 1980.1 & Owe-Larsson* (UCR).

*Lecanora campestris* (Schaerer) Hue

**USA. CALIFORNIA. LOS ANGELES CO.:** Zuma Ridge, on dirt and spike moss, 34° 05.000'N 118° 49.964'W, elev. 613 m., *Knudsen 812 & Sagar* (UCR, hb. Lendemer).

*Lecanora dispersa* (Persoon) Sommerfelt

**USA. CALIFORNIA. LOS ANGELES CO.:** Latigo Canyon, on edges of shale on north slope in oak woodland, 34° 04.832'N 118° 47.795'W, elev. 571 m., *Knudsen 1583* (UCR, hb. Lendemer).

*Lecidea mannii* Tuckerman

**USA. CALIFORNIA. LOS ANGELES CO.:** Castro Crest On sandstone,  $34^{\circ} 04.873'N$   $118^{\circ} 44.905'W$ , elev. 581 m., *Knudsen 1573* (UCR, hb. Lendemer).

***Lecidea plana* (J. Lahm) Nylander**

**USA. CALIFORNIA. LOS ANGELES CO.:** Zuma Ridge, on sandstone,  $34^{\circ} 04.107'N$   $118^{\circ} 50.009'W$ , elev. 661 m., *Knudsen 803 & Sagar* (UCR) - Though not listed in the latest treatment (Hertel & Printzen, 2004) it does occur in southern California. See also *Knudsen 1991* (UCR, hb. Lendemer) from the San Jacinto Mountains, verified with TLC by James Lendemer.

***Melanelia elegantula* (Zahlbruckner) Esslinger**

**USA. CALIFORNIA. LOS ANGELES CO.:** Hepatic Gulch, near Schueren Road, on sandstone,  $34^{\circ} 04.693'N$   $118^{\circ} 38.662'W$ , elev. 700 m., *Knudsen et al. 655.1* (UCR).

***Mobergia angelica* (Stizenberger) H. Mayrhofer & Sheard**

**USA. CALIFORNIA. LOS ANGELES CO.:** Zuma Ridge, on sandstone on north side of outcrop,  $34^{\circ} 05.000'N$   $118^{\circ} 49.964'W$ , elev. 613 m., *Knudsen 804 & Sagar* (UCR).

***Mycobilimbia austrocalifornica* (Zahlbruckner) Knudsen *comb. nov.*<sup>3</sup>**

**USA. CALIFORNIA. LOS ANGELES CO.:** Castro Crest, on sandstone outcrops,  $34^{\circ} 04.127'N$   $118^{\circ} 45.127'W$ , elev. 624 m., *Knudsen 1978 & Owe-Larsson* (UCR). - The lectotype (H-NYL!) and my collection differ from *Mycobilimbia berengeriana* (A. Massalongo) Hafellner & V. Wirth in having wider spores (6-8 microns) and occurring on sandstone as well as soil and probably having a different ecology. The name *Lecidea austrocalifornica* Zahlbruckner was a new name for *Lecidea subplebeia* Nylander in Hasse, a later homonym of *Lecidea subplebeia* Vainio (a Brazilian species). The correct spelling of the specific epithet is "subplebeia" not "subplebeja" (Esslinger 1997). It should be noted that not only is *Lecidea subplebeia* Vainio misspelled in the North American checklist but its exclusion may be incorrect though it could in the southern United States. Based on the holotype and modern collection, I recognize this species as a member of *Mycobilimbia* s. str. *Mycobilimbia austrocalifornica* appears at this time to be rare with collections only seen from the Santa Monica Mountains. Later Hasse collections named *Lecidea subplebeia* I have examined from the Santa Monica Mountains (H!, NY!) are *Lecidella ansema* (Nylander) Knoph & Hertel.

***Ochrolechia subpallens* Verseghy**

**USA. CALIFORNIA. LOS ANGELES CO.:** Royal Oaks Park, on old bark of *Quercus agrifolia*,  $34^{\circ} 05.840'N$   $118^{\circ} 49.016'W$ , elev. 507 m., *Knudsen 679 & Sagar* (UCR).

***Peltula bolanderi* (Tuckerman) Wetmore**

**USA. CALIFORNIA. LOS ANGELES CO.:** Agoura, ridge above Cornell Corners, on lahar in Coneja breccia,  $34^{\circ} 08.233'N$   $118^{\circ} 44.662'W$ , elev. 344 m., *Knudsen 604 & Sagar* (UCR).

***Peltula obscurans* var. *hassei* (Zahlbruckner) Wetmore**

**USA. CALIFORNIA. LOS ANGELES CO.:** Hornwort Gulch, off of Cold Canyon Road, on pillow basalt in exposed outcrop above small riparian area along intermittent creek,  $34^{\circ} 05.020'N$   $118^{\circ} 40.920'W$ , elev. 207 m., *Knudsen et al. 671* (UCR); Calabasas Peak Motorway, on sandstone,  $34^{\circ} 06.390'N$   $118^{\circ} 39.089'W$ , elev. 474 m., *Knudsen 705 & Sagar* (UCR).

***Peltula patellata* (Bagl.) Swinscow & Krog**

**USA. CALIFORNIA. LOS ANGELES CO.:** Agoura, ridge above Cornell Corners, on soil around volcanic outcrops,  $34^{\circ} 08.431'N$   $118^{\circ} 45.500'W$ , elev. 301 m., *Knudsen 588 & Sagar* (UCR).

***Physcia tribacia* (Acharius) Nylander**

**USA. CALIFORNIA. LOS ANGELES CO.:** Off Schueren Road, on sandstone,  $34^{\circ} 04.709'N$   $118^{\circ} 38.684'W$ , elev. 683 m., *Knudsen et al. 647* (UCR).

***Physconia isidiigera* (Zahlbruckner in Herre) Esslinger**

**USA. CALIFORNIA. LOS ANGELES CO.:** Hepatic Gulch, near Schueren Road, on *Melanelia elegantula* on north side of sandstone ridge,  $34^{\circ} 04.693'N$   $118^{\circ} 38.662'W$ , elev. 700 m., *Knudsen et al. 655.2* (UCR).

***Placidium squulosum* (Acharius) Breuss**

**USA. CALIFORNIA. LOS ANGELES CO.:** On soil over Conejo volcanics of large rock outcrop,  $33^{\circ} 06.295'N$   $118^{\circ} 48.694'W$ , elev. 525 m., *Knudsen 998* (UCR); Hornwort Gulch, on pillow basalt outcrops,  $34^{\circ} 05.012'N$   $118^{\circ} 40.925'W$ , elev. 212 m., *Knudsen 1973.1 & Owe-Larsson* (UCR).

***Placynthiella icmalea* (Acharius) Coppins & P. James**

**USA. CALIFORNIA. LOS ANGELES CO.:** Castro Crest, on soil in bowl of alluvial soil with liverworts among sandstone outcrops,  $34^{\circ} 04.873'N$   $118^{\circ} 44.905'W$ , elev. 581 m., *Knudsen 1568* (UCR); Castro Crest, on crumbling sandstone in full sun with *Trapelia involuta*,  $34^{\circ} 04.799'N$   $118^{\circ} 44.978'W$ , elev. 633 m., *Knudsen 1577.1* (hb. Lendemer, UCR).

***Placynthiella knudsenii* Lendemer**

**USA. CALIFORNIA. VENTURA CO.:** On soil, thin-soiled Cenozoic surfaces below Sandstone Peak strewn with rubble,  $34^{\circ} 07.266'N$   $118^{\circ} 56.049'W$ , elev. 890 m., *Knudsen 1964 & Owe-Larsson* (UCR, hb. Lendemer). – This species is rare. This is the fourth location in Southern California found with a disjunctive location in Ozarks (Lendemer 2004; Ryan et al 2004). The collection is a form where the areoles are in the early stages of breaking down to form isidiod structures and was determined by James Lendemer. The apothecia of this collection are immature (without fully developed ascii) but the K+ reddish pigment mentioned in the description is present.

***Placynthiella uliginosa* (Schrader) Coppins & P. James**

**USA. CALIFORNIA. LOS ANGELES CO.:** Off Schueren Road, on soil over sandstone mixed with *Cladonia chlorophaea* on soil stabilized by *Selaginella bigelovii*,  $34^{\circ} 04.722'N$   $118^{\circ} 38.670'W$ , elev. 683 m., *Knudsen et al. 646.2* (hb. Lendemer).

***Polysporina lapponica* (Acharius ex Schaerer) Degelius**

**USA. CALIFORNIA. LOS ANEGLES CO.:** Topanga Canyon, Ed Edelman Park, on sandstone and *Acarospora obpallens*,  $34^{\circ} 07.323'N$   $118^{\circ} 35.148'W$ , elev. 375 m., *Knudsen 1552 & Sagar* (H, UCR, hb. Bungartz) - The synonym, *Sarcogyne bicolor* H. Magnusson, has its type locality in the Santa Monica Mountains (Knudsen 2005).

***Polysporina simplex* (Davies) Vězda**

**USA. CALIFORNIA. LOS ANGELES CO.:** Calabasas Peak Motorway, on sandstone and eroded sandstone soil,  $34^{\circ} 06.390'N$   $118^{\circ} 39.089'W$ , elev. 474 m., *Knudsen 702 & Sagar* (UCR).

***Psora decipiens* (Hedwig) Hoffmann**

**USA. CALIFORNIA. LOS ANGELES CO.:** Hepatic Gulch, near Schueren Road, on sandstone-derived hardened soil,  $34^{\circ} 04.703'N$   $118^{\circ} 38.689'W$ , elev. 682 m., *Knudsen et al. 663.2* (UCR).

***Psora pacifica* Timdal**

**USA. CALIFORNIA. LOS ANGELES CO.:** Agoura, ridge above Cornell Corners, on west-facing slope around volcanic outcrops in openings of coastal sage scrub and invasive weeds, growing on soil over rock with spike moss,  $34^{\circ} 08.431'N$   $118^{\circ} 45.500'W$ , elev. 301 m., *Knudsen 587 & Sagar* (UCR).

***Psora russellii* (Tuckerman) A. Schneider**

**USA. CALIFORNIA. LOS ANGELES CO.:** Hornwort Gulch, off of Cold Canyon Road, on pillow basalt on exposed outcrop above small riparian area along intermittent creek,  $34^{\circ} 05.105'N$   $118^{\circ} 41.044'W$ , elev. 207 m., *Knudsen et al. 669* (UCR).

***Rinodina bolanderi* H. Magnusson**

**USA. CALIFORNIA. LOS ANGELES CO.:** Latigo Canyon, on edges of shale,  $34^{\circ} 04.832'N$   $118^{\circ} 47.795'W$ , elev. 571 m., *Knudsen 1581* (UCR).

***Rinodina californiensis* Sheard**

**USA. CALIFORNIA. LOS ANGELES CO.:** Royal Oaks, on old bark of *Quercus agrifolia*,  $34^{\circ} 05.908'N$   $118^{\circ} 49.007'W$ , elev. 553 m., *Knudsen 997.2* (UCR).

***Rinodina confragosa* (Acharius) Körber**

**USA. CALIFORNIA. LOS ANGELES CO.:** On Conejo volcanics of large rock outcrop,  $33^{\circ} 06.295'N$   $118^{\circ} 48.694'W$ , elev. 525 m., *Knudsen 999* (UCR).

***Rinodina intermedia* Bagl.**

**USA. CALIFORNIA. LOS ANGELES CO.:** Agoura, ridge above Cornell Corners, on *Selaginella bigelovii* and soil,  $34^{\circ} 08.406'N$   $118^{\circ} 45.312'W$ , elev. 375 m., *Knudsen 599 & Sagar* (UCR). - At this location I observed *Texosporium sancti-jacobi* (Tuckerman) Nàdvorník growing as a parasite on thallus of *R. intermedia*. (UCR).

***Sarcogyne arenosa* (Herre) Knudsen and Standley, *comb. nov.*<sup>4</sup>**

**USA. CALIFORNIA. LOS ANGELES CO.:** Topanga Canyon, Ed Edelman Park, on sandstone,  $34^{\circ} 07.294'N$   $118^{\circ} 35.169'W$ , elev. 375 m., *Knudsen 1564 & Sagar* (UCR). – *Sarcogyne arenosa* is closely related to *S. regularis* differing in having a thallus from which the apothecia erupt and ascospores ca.  $3.5\text{-}5.0 \times 1.3\text{-}1.5 \mu\text{m}$ . This is the first reported collection of the species since Herre collected the holotype in the Santa Cruz Mountains of southern California in 1904 (Knudsen 2004b) A full treatment of the species will appear in Vol. 3 of the Sonoran Lichen Flora (Knudsen & Standley in prep.)

***Sarcogyne similis* H. Magnusson**

**USA. CALIFORNIA. LOS ANGELES CO.:** Castro Crest, on sandstone,  $34^{\circ} 04.840'N$   $118^{\circ} 45.136'W$ , elev. 665 m., *Knudsen 978* (UCR); Zuma Ridge, on sandstone,  $34^{\circ} 04.107'N$   $118^{\circ} 50.009'W$ , elev. 661 m., *Knudsen 799 & Sagar* (UCR); Topanga Canyon, Ed Edelman Park, on sandstone,  $34^{\circ} 07.294'N$   $118^{\circ} 35.169'W$ , elev. 375 m., *Knudsen 1564 & Sagar* (UCR), *Knudsen 1567 & Sagar* (UCR).

***Texosporium sancti-jacobi*** (Tuckerman) Nàdvorník

**USA. CALIFORNIA. LOS ANGELES CO.:** Agoura, un-named ridge above Cornell Corners, on *Selaginella bigelovii*, soil, and *Rinodina intermedia*, on ridge top with thin soil and outcrops of volcanic rock, 34° 08.406'N 118° 45.312'W, elev. 375 m., Knudsen 598 & Sagar (ASU) – This is the first of four further locations where populations were found along ridge: (2) 34.08.237'N 118.94.674'W, 371 m.; (3) 34.08.231'N 118.44.649'W, 370 m.; (4) 34.08.229'N 118.44.644'W, 368 m. Other populations should be expected scattered through the area on the ridge west of water tank (Knudsen 2003).

***Theleomma santessonii*** Tibell

**USA. CALIFORNIA. LOS ANGELES CO.:** Off Schueren Road, on sandstone, 34° 04.709'N 118° 38.684'W, elev. 683 m., Knudsen et al. 649 (UCR).

***Trapelia involuta*** (Taylor) Hertel

**USA. CALIFORNIA. LOS ANGELES CO.:** Hepatic Gulch, near Schueren Road, on sandstone, 34° 04.722'N 118° 38.670'W, elev. 687 m., Knudsen et al. 645 (UCR); Zuma Ridge, on sandstone, 34° 04.107'N 118° 50.009'W, elev. 661 m., Knudsen 798 & Sagar (UCR); Castro Crest, on crumbling sandstone, 34° 04.799'N 118° 44.978'W, elev. 633 m., Knudsen 1577.2 (UCR, hb. Lendemer).

***Trapeliopsis flexuosa*** (Fries) Coppins & P. James

**USA. CALIFORNIA. LOS ANGELES CO.:** Zuma Ridge, on dead dry wood on soil on north side of sandstone outcrop, 34° 05.000'N 118° 49.964'W, elev. 613 m., Knudsen 808 & Sagar (UCR).

***Trapeliopsis glaucopholis*** (Nylander ex Hasse) Printzen & McCune

**USA. CALIFORNIA. LOS ANGELES CO.:** Zuma Ridge, on soil on north side of sandstone outcrop, 34° 05.000'N 118° 49.964'W, elev. 613 m., Knudsen 807 & Sagar (UCR).

***Xanthoparmelia cumberlandia*** (Gyelnik) Hale

**USA. CALIFORNIA. LOS ANGELES CO.:** Castro Crest, on soil in full sun at base of sandstone outcrops, 34° 04.867'N 118° 44.868'W, elev. 593 m., Knudsen 1574 (UCR, hb. Lendemer) – Coastal populations often occur on soil and may represent a different species (Nash and Elix, 2004).

***Xanthoparmelia neotaractica*** Hale

**USA. CALIFORNIA. LOS ANGELES CO.:** Hornwort Gulch, on pillow basalt outcrops among chaparral, wet and shaded, 34° 05.012'N 118° 40.925'W, elev. 212 m., Knudsen 1972 (UCR).

## CONCLUSION

I spent most of my field trips visiting sandstone outcrops and searching for terricolous lichen communities. Sandstone outcrops are only rich in lichen flora generally at the top of ridges. This may be because catastrophic fires have destroyed much of the lichen flora on smaller outcrops in dense chaparral areas. Terricolous communities were common in Hasse's time (Hasse 1913). I have only found two good sites so far: the un-named ridge top in Agoura above Cornell Corners and the Cenozoic surfaces near Sandstone Peak. More taxa from the latter site will be reported in Part Two of this study. The reduction of this microhabitat may have several causes: development in lower areas, invasive weeds, long periods of grazing, and possible type conversions to coastal sage scrub. It is an ecological and conservation problem worth further study. The possible reduction of the lichen flora on sandstone outcrops and rarity of thin-soiled habitats meant I spent much more time exploring some days than collecting.

In this list are the first modern reports of *Acarospra arenosa* Herre, *Aspicilia glaucopsina* Nylander ex Hasse, and *Lecidea subplebeia* Nylander in Hasse, all three with type localities in California. Access to new collections has allowed taxonomic re-assessment.

Two species are given new combinations: *Mycobilimbia austrocalifornica* (Zahlbruckner) Knudsen and *Sarcogyne arenosa* (Herre) Knudsen & Standley.

New records for the Santa Monica Mountains are the currently rare species *Cladonia pulvinella* Hammer and *Placynthiella knudsenii* Lendemer. That these are new to Santa Monica Mountains is based on the literature of these recently described species (Hammer 1991; Ahti & Hammer, 2002; Lendemer 2004). A number of other species are probably new reports for the Santa Monica Mountains: *Cladonia cervicornis* (Acharius) Flotow subsp. *cervicornis*, *Lecanora dispersa* (Persoon) Sommerfelt, *Placynthiella icmalea* (Acharius) Coppins & P. James, *Xanthoparmelia neotaractica* Hale, among up to a dozen others. They are not reported here as new because at this time there is no comprehensive checklist of the lichen flora of Santa Monica Mountains. To make one is a massive project and involves the serious study of all specimens from Santa Monica Mountains at FH, H, MIN, NY, UCB and US and their annotation to current nomenclature as

well as gathering numerous scattered reports of individual collections from the literature. That is beyond scope of this paper.

Reported as both new to the Santa Monica Mountains as well to California and North America is the species is *Endocarpon pseudosubnitescens* Breuss. This represents only the third verified collection of this recently described species (Breuss 2002). Its type locality and other collection are in Mexico in Baja California.

Possibly un-described species of *Aspicilia* and *Verrucaria* have been discovered, are currently being analyzed, and were not included in this report.

I report here for the first time a valid collection of *Acarospora smaragdula* (Wahlenberg) A. Massalongo var. *smaragdula* in the Santa Monica Mountains. Most reports of *A. smaragdula* in United States are based on Weber's metaphysical concept of the species (Knudsen 2004a). I have actually at this time only seen valid specimens from Maine, New York, and Latigo Canyon on shale in the Santa Monica Mountains. The varietal status refers to differences mainly between numerous punctiform apothecia (var. *smaragdula*) and having usually dilated apothecia (var. *lesdainii*). Both may contain norstictic acid. The two varieties are distinguishable in the Santa Monica Mountains and occur within several kilometers of each other on different substrates. In Europe they intergrade.

#### ACKNOWLEDGEMENTS

Special thanks to James Bennett, Richard Harris, and Clifford Wetmore for their peer reviews. For their aid in various ways I thank Ted Ahti, Charis Bratt, Othmar Breuss, Frank Bungartz, Genevieve Lewis-Gentry, Samuel Hammer, Richard Harris, James Lendemer, Bjorn Owe-Larsson, Tony McKenny, the late Bruce Ryan, Tarja Sager, Andy Sanders, John Tiszler, Shirley Tucker and Carl Wishner as well as the curators of ASU, H, FH, MIN, SBBG, and UPS. I want to thank the California State Parks and Santa Monica Mountains Conservancy for granting permits to access their properties within the Santa Monica Mountains Recreational Area.

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## ENDNOTES

### **1. *Acarospora obpallens* (Nylander in Hasse) Zahlbruckner**

*Lecanora obpallens* Nylander in Hasse, Bull. Tor. Bot. Club, 24(9): 446. 1897. TYPE: On earth, Santa Monica Range, near Soldier's Home, Los Angeles County. November.1896. H.E. Hasse s.n. (H-HYL 12067!, lectotype (**selected here**)).

*Acarospora obpallens* (Nylander in Hasse) Zahlbruckner, Beihefte zum Botan. Zentralbl., 13: 163, 1902.

Syn nov. *Acarospora carnegiei* Zahlbruckner, New North American Lichens, p. 297. 1908. TYPE: In the vicinity of the Desert Botanical Laboratory, Tuscon, Arizona, USA. 1908. J.C. Blumer s.n. (W!, holotype)

### **2. *Acarospora smaragdula* (Wahlenberg) A. Massalongo**

*Endocarpon smaragdulum* Wahlenberg in Acharius, Meth. Lich. Suppl., p.29. 1803.

*Acarospora smaragdula* (Wahlenberg) A. Massalongo, Ric. Auton. Lich. Crost., p.29. 1852.

Syn. nov. *Acarospora cratericola* H. Magnusson, Kungli Svensk Vetenskapsakademiens Handlingar, ser. 2, 8(4):368. 1929. TYPE: Entonnoir d'un cratere, Plano Grande, Estate de Mixcoac, Mixcoac, Mexico. 12.May.1927. F. Amable 740 (UPS!, holotype).

### **3. *Mycobilimbia austrocalifornica* (Zahlbruckner) Knudsen, comb. nov.**

*Lecidea subplebeia* Nylander in Hasse non *Lecidea subplebeia* Vainio, Bull. Tor. Bot. Club, 24(9): 447. 1897. Type: On earth, Santa Monica Range, near Soldier's Home, Los Angeles Co., California, USA. November.1896. H.E. Hasse s.n. (H-NYL 12067!, lectotype (**designated here**))

*Lecidea austrocalifornica* Zahlbruckner nomen novum pro. *Lecidea subplebeia* Nylander in Hasse non *Lecidea subplebeia* Vainio. Cat. Lich. Univ., 3: 738. 1925.

### **4. *Sarcogyne arenosa* (Herre) Knudsen & Standley, comb. nov.**

*Acarospora arenosa* Herre, Proceed. Washingt. Acad. Sci., 12: 129. 1910. TYPE: On sandstone, hills west of Stanford University, Santa Cruz Mountains, California, USA. June 11, 1904. A. Herre 540 (FH! (HUH barcode 60874), lectotype (**designated here**); FH! (HUH barcode 60873), MIN!, US! isolectotypes).

## Lichens of Eastern North America Exsiccati. Fascicle IV, nos. 151-200

JAMES C. LENDEMER<sup>1</sup>

**ABSTRACT.** – In conjunction with the preparator's work on the lichen flora of eastern North America he began distribution of this exsiccat (Lichens of Eastern North America Exsiccati) from the Academy of Natural Sciences of Philadelphia (PH). This, the fourth fascicle in the series comprises the nos. 151 to 200 and is distributed in 20 sets on exchange to the following herbaria: ASU, B, BG, CANB, CHR, DOV, FH, GZU, H, HMAS, M, MIN, S, TSB, TNS, TU, UPS, herb. Lendemer. *Lepraria caesiella* R.C. Harris sp. nov., is described as new to science. The new combination *Phlyctis ludoviciensis* (Müll. Arg.) Lendemer, is proposed.

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### FASCICLE IV

#### 151. *Schismatomma glaucescens* (Nylander ex Willey) R.C. Harris

Duplicate Det. (NY!) – R.C. Harris – December 1, 2003

**UNITED STATES OF AMERICA. NEW JERSEY. CUMBERLAND COUNTY.:** In the crevices between bark plates of the trunk of an oak (*Quercus*), in a depauperate mixed pine (*Pinus*) – oak (*Quercus*) forest, just north of the railroad tracks, ca. 1 mile east of Dividing Creek Station, ca. 5 miles northeast of Newport. - elev. ca. 50 ft. - UTM 18 493140E 4350351N – Lat. 39° 18' 09"N, Long. 75° 04' 47"W – Assoc. spp.: *Lepraria spp.*, *Flavoparmelia caperata*, *Punctelia rufecta*, *Lecanora hybocarpa*, *Lecanora subpallens*.

Thallus corticolous, crustose, esorediate, immersed within substrate or thin and indistinct; apothecia with a dense white pruina, UV+ yellow; hypothecium brown; hymenium colorless, IKI-; epiphymenium brownish; ascus sheath IKI-, with a IKI+ red/violet tholus and a small blunt axial body protruding all the way through the tholus; spores 8-per ascus, colorless, obtuse-ellipsoid, tapering to one end, often curved and slightly bent, 4-celled, 22-32µm x 6-8µm, irregularly arranged within ascus.

James C. Lendemer *et al.* #1531  
w/ James A. Macklin, & Gerry Moore

November 13, 2003

#### 152. *Lecanora subpallens* Zahlbruckner Det. J.C. Lendemer – November 22, 2003

**UNITED STATES OF AMERICA. NEW JERSEY. CUMBERLAND COUNTY.:** On the bark of a red maple (*Acer rubrum*), on the margins of a dirt road bordering Bear Swamp East Natural Area, on the edge of a mixed pine (*Pinus* spp.) / oak (*Quercus*) forest, ca. 4 miles northeast of Newport, ca. 2 miles east of Paynters Crossing,  $\frac{1}{2}$  mile east of Dividing Creek Station, Bear Swamp East Natural Area. – elev. 45 ft. - UTM 18 492354E 4350126N – Lat. 39° 18' 09"N, Long. 75° 05' 19"W - Assoc. spp.: *Lepraria incana*, *Lecanora hybocarpa*, *Punctelia rufecta*, *Flavoparmelia caperata*.

Thallus corticolous, crustose, thick, blue-white, esorediate, verruculose; apothecia lecanorine, margins white, prominent, becoming deformed and somewhat excluded with age; disks pink, with a heavy white pruina; epiphymenium orange/brown, C+ yellow; hymenium colorless, C-; hypothecium and exciple, tan-brown to colorless, C-; spores simple, 8-per ascus, colorless, obtuse-ellipsoid, often tapering somewhat to one end, 10µm x 5-7µm.

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James C. Lendemer *et al.* #1532  
w/ James A. Macklin & Gerry Moore

November 13, 2003

**153. *Stereocaulon glaucescens* Tuckerman**  
Det. J.C. Lendemer – December 11, 2003  
Duplicate Confirmed (NY!) – Richard C. Harris – January 7, 2004

**UNITED STATES OF AMERICA. CONNECTICUT. LITCHFIELD COUNTY.:** Forming extensive colonies over granite, in a mixed hardwood-conifer forest with extensive granitic boulders, Sam Yankee Woodlot, Great Mountain Forest, east of Canaan Mountain Road, Canaan. – elev. ca. 300 ft. – UTM 18 642841E 4645858N - Lat. 41° 57', 13"N, Long. 73° 16', 36"W. – Assoc. spp.: *Xanthoparmelia somloensis*, *Xanthoparmelia plittii*, *Xanthoparmelia conspersa*, *Cladonia squamosa*, *Cladonia dimorphoclada*, *Cladonia subtenuis*, *Cladonia rangiferina*, *Rhizocarpon rubescens*, *Diploschistes scruposus*, *Diploschistes actinostomus*, *Aspicilia sp.*

James C. Lendemer *et al.* #1635  
w/ participants of the 2003 A. Leroy Andrews Foray

September 20, 2003

**154. *Cladonia parasitica* (Hoffmann) Hoffmann**  
Det. James C. Lendemer – February 29, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. CUMBERLAND COUNTY.:** On the rotting trunk of a pine (*Pinus*), in a dense forest of pine (*Pinus*) and oak (*Quercus*) with a dense understory of *Rhododendron*, north of Shaws Mill Road, ca. 2 miles west of intersection with NJ Route #555, north of Dividing Creek, Edward Bevin Wildlife Management Area. – elev. ca. 80 ft. - UTM 18 489103E 4352539N – Lat. 39° 19' 20"N, Long. 75° 07' 35"W. – Assoc. spp.: *Lepraria sp.*

Thallus corticolous/lignicolous, fruticose; squamules poorly defined, sorediate, breaking down into soredia; podetia short, unbranched, sorediate; apothecia brown.

James C. Lendemer #1906 & James A. Macklin

February 28, 2004

**155. *Lepraria lobificans* Nylander**  
Det. J.C. Lendemer – January 16, 2004  
Duplicate Confirmed (NY!) – R.C. Harris – March 18, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. BURLINGTON COUNTY.:** On part of a ruined stone wall, in a mixed pitch pine (*Pinus rigida*) – oak (*Quercus*) forest with the remains of an abandoned stone structure, along Hampton Road, ca. 2.5 miles northeast of Atsion, Wharton State Forest. – elev. 40 ft. - UTM 18 526272E 4401362N – Lat. 39° 45' 42"N, Long. 74° 41' 36"W – Assoc. spp.: *Cladonia spp.*, *Sarcogyne sp.*, *Verrucaria sp.*

Thallus saxicolous, crustose, blue-green, sorediate, UV-, little lobed.

James C. Lendemer #1801 & Suzanne Joneson

January 15, 2004

**156. *Lecanora hybocarpa* (Tuckerman) Brodo**  
Det. J.C. Lendemer – March 1, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. CUMBERLAND COUNTY.:** On the bark of an oak (*Quercus*), in an oak dominated pine (*Pinus*) – oak (*Quercus*) forest with sparse maple (*Acer*), and gum (*Nyssa*), parts of which were recently burned and parts of which are experiencing regeneration failure, north of railroad tracks crossing NJ Route #555, west of Dividing Creek Station, Edward Bevin Wildlife Management Area. – elev. ca. 30 ft. - UTM 18 493354E 4350433N – Lat. 39° 18' 12"N, Long. 75° 04' 38"W – Assoc. spp.: *Lepraria sp.*, *Phaeophyscia rubropulchra*, *Physcia americana*, *Punctelia subrudecta*, *Flavoparmelia caperata*, *Lecanora subpallens*.

Thallus corticolous, crustose, thin to thick, verruculose, white, UV-, esorediate; apothecia lecanorine; disks orange-brown to reddish; margins white; epiphytum orange/brown, KOH+ yellow, with small crystals; hymenium colorless; exciple with large crystals; hypothecium colorless; paraphyses slender, not apically swollen; ascospores colorless, obtuse-ellipsoid, simple, 8-per ascus, (8-)10-12µm x 6µm.

James C. Lendemer #1939 & James A. Macklin

February 28, 2004

**157. *Peltigera praetextata* (Flörke ex Sommerfelt) Zopf**

Det. J.C. Lendemer – March 15, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. BUCKS COUNTY.:** On mossy rocks partially submerged in water, in a mixed hardwood forest of *Acer*, *Quercus*, *Nyssa*, and *Fraxinus* with abundant diabase boulders, along a small tributary to Tohickon Creek, east of Tohickon Creek, north of parking area at terminus of Camp Trail Road, north of PA Route #563, ca. 4 miles southeast of Quakertown, Nockamixon State Park. – elev. 500-550 ft. - UTM 18 477464E 4476805N – Lat. 40° 26' 30"N, Long. 75° 15' 57"W. – Assoc. spp.: *Dermatocarpon sp.*, *Collema sp.*

Thallus saxicolous/muscicolous, foliose, loosely attached to substrate, esorediate, lobulate, gray-brown; upper surface dull, weakly tomentose towards lobe tips; underside pale-white, with short to long white rhizines, slightly raised pale (brown) veins present; margins with abundant lobules.

James C. Lendemer #1983 & Richard F. Lendemer

March 14, 2004

**158. *Xanthoparmelia conspersa* (Ehrhart ex Acharius) Hale**

Det. J.C. Lendemer – March 31, 2004

Duplicate Confirmed (NY!) – R.C. Harris – June 15, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. MONROE COUNTY.:** On a large semi-shaded boulder, in the upland (dry) portions of a swampy northern hardwood forest (*Acer*, *Betula*, *Fraxinus*), on the margins of Palen Swamp and raising upland towards the lower slopes of Kistler Ledge, including a large clearing with abandoned building materials, shaded boulders, and sparse gentle rock exposures, north of PA Route #423, Tobyhanna State Park. – elev. ca. 2100 ft. - UTM 18 468549E 4564066N – Lat. 41° 13' 39"N, Long. 75° 22' 31"W – Assoc. spp.: *Rhizocarpon spp.*, *Flavoparmelia baltimorensis*, *Punctelia rudecta*, *Acarospora fuscata*, *Aspicilia spp.*

Thallus saxicolous, foliose, green, esorediate, isidiate, closely attached to substrate; underside black; medulla white, KOH+ deep yellow.

James C. Lendemer #1993 & James A. Macklin

March 28, 2004

**159. *Cladonia petrophila* R.C. Harris**

Det. J.C. Lendemer – March 31, 2004

Duplicate Confirmed (NY!) – R.C. Harris – June 15, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. LUZERNE COUNTY.:** On a large shaded boulder, in a moist mixed northern hardwood forest (*Acer*, *Betula*, *Fraxinus*, etc.) with sparse hemlock, on a south facing slope with abundant rock outcrops, along the north shore of an unnamed lake southeast of Lake Frances, just south of Lake Frances Day Use Area, south of intersection of Honey Hole Road and Lake Frances Road, “Reilly” on topographic map, Nescopeck State Park. – elev. ca. 1200 ft. - UTM 18 426553E 4549056N – Lat. 41° 05' 22"N, Long. 75° 52' 28"W – Assoc. spp.: *Leptogium sp.*, *Peltigera lepidophora*, *Lepraria lobificans*, *Lepraria sp.*, *Agonimia sp.*, *Phaeophyscia adiastola*, *Acarospora fuscata*, *Aspicilia sp.*

Thallus saxicolous, squamulose, esorediate; squamules lobed, divided, underside white-tan, UV+ blue-white.

James C. Lendemer #2000 & James A. Macklin

March 27, 2004

**160. *Phlyctis* sp.**

Det. J.C. Lendemer – March 31, 2004

Duplicate Confirmed (NY!) – R.C. Harris – June 15, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. LUZERNE COUNTY.:** On a large shaded boulder, in a moist mixed northern hardwood forest (*Acer*, *Betula*, *Fraxinus*, etc.) with sparse hemlock, on a south facing slope with abundant rock outcrops, along the north shore of an unnamed lake southeast of Lake Frances, just south of Lake Frances Day Use Area, south of intersection of Honey Hole Road and Lake Frances Road, “Reilly” on topographic map, Nescopeck State Park. – elev. ca. 1200 ft. - UTM 18 426553E

4549056N – Lat. 41° 05' 22"N, Long. 75° 52' 28"W – Assoc. spp.: *Leptogium* sp., *Peltigera lepidophora*, *Lepraria lobificans*, *Lepraria* sp., *Agonimia* sp., *Phaeophyscia adiastola*, *Acarospora fuscata*, *Aspicilia* sp.

Thallus saxicolous, crustose, blue-white, sorediate, UV-, KOH+ red (strong); soredia formed from a breakdown of small portions of the thallus, appearing to create diffuse (poorly defined), excavate soralia.

James C. Lendemer #2007 & James A. Macklin

March 27, 2004

**161. *Allocetraria oakesiana* (Tuckerman) Randlane & Thell**

Det. J.C. Lendemer – April 1, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. LUZERNE COUNTY.:** On dead shrubs, in a moist mixed northern hardwood forest (*Acer*, *Betula*, *Fraxinus*, etc.) with sparse hemlock, on a south facing slope with abundant rock outcrops, along the north shore of an unnamed lake southeast of Lake Frances, just south of Lake Frances Day Use Area, south of intersection of Honey Hole Road and Lake Frances Road, "Reilly" on topographic map, Nescopeck State Park. – elev. ca. 1200 ft. - UTM 18 426553E 4549056N – Lat. 41° 05' 22"N, Long. 75° 52' 28"W – Assoc. spp.: *Flavoparmelia caperata*, *Lepraria lobificans*, *Cladonia* spp.

Thallus corticolous, foliose, green, sorediate; soralia on lobe margins; lobes convex; underside pale/tan.

James C. Lendemer #2024 & James A. Macklin

March 27, 2004

**162. *Biatora printzenii* Tønsberg**

Det. J.C. Lendemer – April 1, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. LUZERNE COUNTY.:** On the bark of a red maple (*Acer rubrum*), in a wet (many small streams and seeps) conifer (hemlock) dominated northern hardwood forest (*Acer*, *Betula*, *Fraxinus*, etc.) with abundant shaded sandstone ledges and exposed rock outcrops, on the lower north facing slopes of Mount Yeager, south of Honey Hole Road, Nescopeck State Park. – elev. ca. 1100 ft. - UTM 18 423855E 4547249N – Lat. 41° 04' 22"N, Long. 75° 54' 23"W – Assoc. spp.: *Lepraria lobificans*, *Punctelia rudecta*, *Flavoparmelia caperata*.

Thallus corticolous, crustose, thin, smooth blue-gray to greenish, sorediate, UV-, C+ pinkish, PD+ orange; soralia well defined and overflowing, with age soredia forming a nearly continuous crust; soredia green.

James C. Lendemer #2042 & James A. Macklin

March 27, 2004

**163. *Xanthoparmelia conspersa* (Ehrhart ex Acharius) Hale**

Det. J.C. Lendemer – April 2, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. LUZERNE COUNTY.:** On rock, in abandoned open pastureland with abundant disturbance based vegetation (*Rubus*, *Rosa*) with gentle sloping rock exposures and the remnants of stone walls bordering the fields, Lower Day-Use Area, on gentle southeast facing slopes above Nescopeck Creek, south of Honey Hole Road, Nescopeck State Park. – elev. ca. 1200 ft. - UTM 18 422514E 4546548N – Lat. 41° 03' 59"N, Long. 75° 55' 20"W – Assoc. spp.: *Aspicilia* sp., *Xanthoparmelia cumberlandia*, *Peltigera* sp., *Caloplaca flavovirescens*, *Trapelia* sp., *Acarospora fuscata*, *Lecanora* sp., *Xanthoparmelia plittii*.

Thallus saxicolous, foliose, green, esorediate, isidiate, closely attached to substrate; underside black; medulla white, KOH+ deep yellow.

James C. Lendemer #2046 & James A. Macklin

March 27, 2004

**164. *Abrothallus caerulescens* Kotte**

Duplicate Determined (LUX!) - P. Diederich – June 19, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. LUZERNE COUNTY.:** On *Xanthoparmelia*, on rock, in abandoned open pastureland with abundant disturbance based vegetation (*Rubus*, *Rosa*) with gentle sloping rock exposures and the remnants of stone walls bordering the fields, Lower Day-Use Area, on gentle southeast facing slopes above Nescopeck Creek, south of Honey Hole Road, Nescopeck State Park. – elev. ca. 1200 ft. - UTM 18 422514E 4546548N – Lat. 41° 03' 59"N, Long. 75° 55' 20"W – Assoc.

*spp.*: *Aspicilia* sp., *Xanthoparmelia cumberlandia*, *Peltigera* sp., *Caloplaca flavovirescens*, *Trapelia* sp., *Acarospora fuscata*, *Lecanora* sp., *Xanthoparmelia plittii*, *Xanthoparmelia conspersa*.

Thallus lichenicolous on *Xanthoparmelia* spp., forming large black ascomata; ascospores 2-celled, brown, lower cell often smaller, 15-16 $\mu$ m x 6-8 $\mu$ m; epiphymenium brown, KOH+ brown/yellow; hymenium greenish in upper portions and colorless below; hypothecium brown, KOH+ brown/yellow.

James C. Lendemer #2067 & James A. Macklin

March 27, 2004

**165. *Rhizocarpon reductum* Th. Fries**

Det. J.C. Lendemer – April 3, 2004

Duplicate Confirmed (NY!) – R.C. Harris – June 15, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. MONROE COUNTY.:** On a large semi-shaded boulder, in the upland (dry) portions of a swampy northern hardwood forest (*Acer*, *Betula*, *Fraxinus*), on the margins of Palen Swamp and raising upland towards the lower slopes of Kistler Ledge, including a large clearing with abandoned building materials, shaded boulders, and sparse gentle rock exposures, north of PA Route #423, Tobyhanna State Park. – elev. ca. 2100 ft. - UTM 18 468549E 4564066N – Lat. 41° 13' 39"N, Long. 75° 22' 31"W – *Assoc. spp.*: *Rhizocarpon* sp., *Xanthoparmelia plittii*, *Xanthoparmelia conspersa* *Flavoparmelia baltimorensis*, *Punctelia rudecta*, *Acarospora fuscata*, *Aspicilia* spp.

Thallus saxicolous, crustose, thick to thin, brown, esorediate, UV-, KOH-; apothecia black; epiphymenium brown, KOH-; hymenium colorless; hypothecium brown, KOH-; exciple black/brown, KOH-; ascospores colorless, muriform, 8-per ascus, 22-24 $\mu$ m x 12-14 $\mu$ m. This collection apparently lacks stictic acid.

James C. Lendemer #2071 & James A. Macklin

March 28, 2004

**166. *Caloplaca flavovirescens* (Wulfen) Dalla Torre & Sarnthein**

Det. J.C. Lendemer – April 5, 2004

Duplicate Confirmed (NY!) – R.C. Harris – June 15, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. MONROE COUNTY.:** On concrete, in the upland (dry) portions of a swampy northern hardwood forest (*Acer*, *Betula*, *Fraxinus*), on the margins of Palen Swamp and raising upland towards the lower slopes of Kistler Ledge, including a large clearing with abandoned building materials, shaded boulders, and sparse gentle rock exposures, north of PA Route #423, Tobyhanna State Park. – elev. ca. 2100 ft. - UTM 18 468549E 4564066N – Lat. 41° 13' 39"N, Long. 75° 22' 31"W – *Assoc. spp.*: *Caloplaca* sp.

Thallus saxicolous, crustose, thin to thick, yellow, esorediate; apothecia orange, disks slightly darker than margins; epiphymenium brown, C-; hymenium colorless; hypothecium colorless; exciple colorless; ascospores colorless, ca. 8-per ascus, with ca. 4 $\mu$ m isthmus, obtuse-ellipsoid, 14-16 $\mu$ m x (6)-7-8 $\mu$ m.

James C. Lendemer #2097 & James A. Macklin

March 28, 2004

**167. *Xanthoparmelia somloënsis* (Gyelnik) Hale**

Det. J.C. Lendemer – April 12, 2004

**UNITED STATES OF AMERICA. MARYLAND. CECIL COUNTY.:** On a granite gravestone, in the older portions of West Noddingham Presbyterian Cemetery, West Nottingham Presbyterian Church, West Noddingham. – elev. ca. 340 ft. - UTM 18 407687E 4391813N – Lat. 39° 40' 16"N, Long. 76° 04' 35"W – *Assoc. spp.*: *Caloplaca* sp., *Verrucaria* sp., *Aspicilia* sp.

Thallus saxicolous, foliose, esorediate, lacking isidia and lobules, loosely attached to substrate; lobes narrow to broad, overlapping, often somewhat convex; underside pale tan/brown; medulla white, KOH+ yellow turning red (quickly); apothecia abundant.

James C. Lendemer et al. #2102

April 11, 2004

w/ Ethel W. McCardell & Vivian S. McCardell

**168. *Myelochroa aurulenta* (Tuckerman) Elix & Hale**

Det. J.C. Lendemer – April 12, 2004

Duplicate Confirmed (NY!) – R.C. Harris – June 15, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. BUCKS COUNTY.:** On a diabase boulder, in a moist rocky stream valley with abundant mossy diabase boulders and a northern hardwood forest of *Acer*, *Fraxinus*, *Liriodendron*, etc., along a small tributary to the Tohickon Creek, south of PA Route #563, east of Kellers Church, Nockamixon State Park. – elev. ca. 500 ft. - UTM 18 479252E 4478527N – Lat. 40° 27' 26"N, Long. 75° 14' 41"W – Assoc. spp.: *Phaeophyscia adiastola*, *Porpidia albocaerulescens*, *Lepraria sp.*, *Punctelia rufecta*, *Rinodina vezdae*, *Agonimia sp.*

Thallus saxicolous, foliose, loosely attached to substrate, esorediate, pustulose, gray-blue; medulla yellow; pustules abundant, laminal; underside black.

James C. Lendemer #2113 & Ann F. Rhoads

March 30, 2004

**169. *Phaeophyscia adiastola* (Esslinger) Esslinger**

Det. J.C. Lendemer – April 12, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. BUCKS COUNTY.:** On a diabase boulder, in a moist rocky stream valley with abundant mossy diabase boulders and a northern hardwood forest of *Acer*, *Fraxinus*, *Liriodendron*, etc., along a small tributary to the Tohickon Creek, south of PA Route #563, east of Kellers Church, Nockamixon State Park. – elev. ca. 500 ft. - UTM 18 479252E 4478527N – Lat. 40° 27' 26"N, Long. 75° 14' 41"W – Assoc. spp.: *Myelochroa aurulenta*, *Porpidia albocaerulescens*, *Lepraria sp.*, *Punctelia rufecta*, *Rinodina vezdae*, *Agonimia sp.*

Thallus muscicolous/saxicolous, foliose, sorediate, brown-gray; medulla white; underside black; rhizines abundant, short, black with white tips; soralia marginal, with coarse soredia.

James C. Lendemer #2114 & Ann F. Rhoads

March 30, 2004

**170. *Nadvornikia soreciata* R.C. Harris**

Det. J.C. Lendemer – May 18, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. SULLIVAN COUNTY.:** On the bark of a tree, in a mixed northern hardwood forest with gradation from primarily *Acer*, *Fraxinus*, *Betula* to hemlock (*Tsuga*), with shaded boulders, on a north facing slope, area around amphitheater, east of Mineral Spring Road along Loyalsock Creek, Worlds End State Park. – elev. ca. 1200 ft. - UTM 18 369024E 4592115N – Lat. 41° 28' 12"N, Long. 76° 34' 07"W – Assoc. spp.: *Flavoparmelia caperata*, *Lepraria lobificans*.

Thallus corticolous, crustose, white, UV-; soralia punctiform; soredia coarse; photobiont *Trentepohlia*.

James C. Lendemer #2243 & James A. Macklin

April 18, 2004

**171. *Cladonia macilenta* Hoffmann**

Det. J.C. Lendemer – May 20, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA LUZERNE COUNTY.:** On soil and organic debris, in a highly disturbed northern hardwood forest of primarily *Prunus*, *Acer*, and *Fraxinus*, badly damaged by a windstorm (recently?), with open rocky areas and humus exposures in full sun, along the left (west) side of PA Route #487, southwest of Lake Rose Visitor Center, north of Red Rock, just south/east of Sullivan County line, Rickets Glenn State Park. – elev. ca. 2200 ft. - UTM 18 390958E 4575332N - Lat. 41° 19' 20"N, Long. 76° 18' 10"W – Assoc. spp.: *Trapeliopsis flexuosa*, *Trapeliopsis granulosa*, *Cladonia cristatella*.

Thallus terricolous, fruticose, sorediate, UV-, white-gray; primary squamules small, diffuse and sorediate; podetia thick to thin, tapering, sorediate; apothecia/pycnidia red.

James C. Lendemer #2300 & James A. Macklin

April 17, 2003

**172. *Lepraria caesiella* R.C. Harris sp. nov.<sup>1</sup>**

Det. J.C. Lendemer & R.C. Harris – May 21, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. MONROE COUNTY.:** On a large dead birch (*Betula*), Community Drive Wetlands, drained portions boarded by *Alnus*, and swampy portions primarily with *Acer* and *Fraxinus*, bisected by Hogback Ridge forested with dense hemlocks (*Tsuga*) and large

semi-calcareous rock exposures and boulders, ca. 1 mile southeast of Shoemakers, ca. 2 miles south of Bushkill, Delaware Water Gap National Recreation Area. – elev. ca. 700-800 ft. - UTM 18 499427E 4547474N – Lat. 41° 04' 43"N, Long. 75° 00' 24"W.

Thallus corticolous, crustose, sorediate, blue, UV-, sterile, continuous to diffuse; margins poorly developed, not distinctly lobed.

James C. Lendemer #2304 & R.C. Harris *et al.*  
w/ participants of the 1<sup>st</sup> H. Crum Workshop

April 24, 2003

**173. *Lepraria lobificans* Nylander**  
Det. J.C. Lendemer – June 9, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. BUCKS COUNTY.:** On the bark of a tulip tree (*Liriodendron*), in a rocky northern hardwood forest with *Acer*, *Fraxinus*, *Liriodendron*, etc., with abundant diabase boulders, along a small tributary to the Tohickon Creek with abundant mosses and hepatics as well as *Dermatocarpon*, north of PA Route #563, north of Kellers Church, Nockamixon State Park. – elev. ca. 550 ft. - UTM 18 480701E 4480793N – Lat. 40° 28' 39"N, Long. 75° 13' 40"W – Assoc. spp.: *Lepraria* sp., *Cladonia* sp., *Flavoparmelia caperata*, *Physcia millegrana*.

Thallus corticolous, crustose, blue-gray, sorediate, thick, UV-; margins poorly lobed. TLC: atranorin, zeorin, stictic acid, constictic acid.

James C. Lendemer #2398 & Ann F. Rhoads

March 30, 2004

**174. *Physconia leucoleiptes* (Tuckerman) Esslinger**  
Det. J.C. Lendemer – July 16, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. ALTANTIC COUNTY.:** On the west facing sides of old gravestones, Pleasant Mills Cemetery, west of Batsto, Batsto Natural Area, Wharton State Forest. – elev. ca. 10 ft. - UTM 18 529086E 4388055N – Lat. 39° 38' 30"N, Long. 74° 39' 40"W – Assoc. spp.: *Physcia* sp., *Caloplaca* sp., *Xanthomendoza fulva*, *Verrucaria* sp.

Thallus saxicolous, foliose, loosely attached to substrate, sorediate; underside black, white towards lobe tips; medulla white, C-; soralia marginal, C-; thallus densely pruinose throughout.

James C. Lendemer *et al.* #2657

June 25, 2004

w/ Carrie Kiel, James A. Macklin, Alfred E. Schuyler, Sasha Eisenman, and Bill Roberts

**175. *Rinodina* sp.**  
Det. J.C. Lendemer - July 16, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. MONROE COUTNY.:** On the branches of a small maple (*Acer*), in a lowland forest of maple (*Acer*) and birch (*Betula*) on a southeast facing slope, along Freeman Tract Road (River Road North) between intersection with Community Drive and terminus on west shore of Delaware River, ca. 2 miles southeast of Shoemakers, south of Bushkill, Delaware Water Gap National Recreation Area. – elev. ca. 500 ft. - UTM 18 499336E 4546600N – Lat. 41° 04' 15"N, Long. 75° 00' 28"W. – Assoc. spp.: *Flavoparmelia caperata*, *Punctelia rudecta*, *Phaeophyscia pusilloides*, *sterile sorediate* sp., *Rinodina* sp.

Thallus corticolous, crustose, esorediate, gray-green, thin, smooth; apothecia small; discs purple-brown; margins pale; epiphymenium brown, KOH-; hymenium colorless; hypothecium colorless/tan; exciple colorless; ascospores brown, obtuse-ellipsoid, ca. 8-per ascus, *Physconia*-type?, 13-16µm x 7.5-8.5µm.

James C. Lendemer #2674 & Richard C. Harris *et al.*  
w/ participants of 1<sup>st</sup> H. Crum Workshop

April 25, 2004

**176. *Trapeliopsis viridescens* (Schrader) Coppins & P. James**  
Det. J.C. Lendemer – July 18, 2004

**UNITED STATES OF AMERICA. PENNSYLVANIA. MONROE COUNTY.:** On a rotting tree base, Community Drive Wetlands, drained portions boarded by *Alnus*, and swampy portions primarily with *Acer* and *Fraxinus*, bisected by Hogback Ridge forested with dense hemlocks (*Tsuga*) and large semi-

calcareous rock exposures and boulders, ca. 1 mile southeast of Shoemakers, ca. 2 miles south of Bushkill, Delaware Watergap National Recreation Area. – elev. ca. 700-800 ft. - UTM 18 499427E 4547474N – Lat. 41° 04' 43"N, Long. 75° 00' 24"W. – Assoc. spp.: *Myxobilimbia sabuletorum*, *Strigula stigmatella*, *Lepraria lobificans*, *Leptogium dactylinum*, *Cladonia fimbriata*, *Peltigera evansiana*, *Cladonia furcata*, *Cladonia incrassata*.

Thallus lignicolous, crustose, sorediate, green, granular, thick; soralia diffuse, lighter in color than thallus, C+ pink; apothecia black, lecideine, eventually strongly convex with deformed margins; epihymenium brown/green; hymenium colorless; hypothecium brown; exciple brown; (epi-)/hymenial green/brown gel in apothecia C+ yellow/orange; ascospores ellipsoid, colorless, with oil droplets, simple, ca. 8-per ascus, 12-15 $\mu$ m x 5 $\mu$ m.

James C. Lendemer #2675 & Richard C. Harris *et al.*  
w/ participants of 1<sup>st</sup> H. Crum Workshop

April 24, 2004

**177. *Cetraria arenaria* Kärnefelt**

Det. J.C. Lendemer – September 8, 2004

Duplicate Confirmed (NY!) – R.C. Harris – December 17, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. BURLINGTON COUNTY.:** On sandy soil, in an extensive swamp/swale system dominated by maple (*Acer*) and gray birch (*Betula populifolia*) and bordered by huckleberry (*Gaylussacia*), with sandy ridges grading into mixed pine (*Pinus*) – oak (*Quercus*) forest, part of the Oswego/Papoose Rivers drainage system, west of abandoned hunting lodge, ca. 1.2 miles southwest of Sim Place, north of Warren Grove Road, Warren Grove Target Area. – elev. 50-70 ft. – UTM 18 547637E 4397825N - Lat. 39° 43' 44" N, Long. 74° 26' 38" W. – Assoc. spp.: *Cladonia arbuscula*, *Cladonia atlantica*, *Cladonia grayi*.

Thallus terricolous, fruticose, brown, esorediate, forming small cushions; branches flattened, margins with abundant cilia.

James C. Lendemer *et al.* #2902  
w/ Walter Bien, Ted Gordon, Bill Olson, Alfred E. Schuyler, & Bill Standaert

August 5, 2004

**178. *Micarea erratica* (Körber) Hertel *et al.***

Det. J.C. Lendemer – September 11, 2004

Duplicate Confirmed (NY!) – R.C. Harris – December 17, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. BURLINGTON COUNTY.:** On small pebbles, in low, open, disturbed sandy barrens with small oaks (*Quercus*) and pines (*Pinus*), south of Airfield landing strip, Warren Grove Target Area, southwest of Warren Grove. – elev. 130 ft. – UTM 18 551305E 4394062N – Lat. 39° 41' 41" N, Long. 74° 24' 06" W. – Assoc. spp.: *Cladonia submittis*, *Cladonia cristatella*, *Cladonia grayi*, *Cladonia rappii*, *Cladonia polycarpoidea*, *Placynthiella uliginosa*, *Lecidea crytidia*.

Thallus saxicolous, crustose, areolate, white, esorediate; apothecia black; margins persistent, flexuous; epihymenium brown/blue-green, KOH-; hymenium colorless; hypothecium brown; exciple blue-green, KOH-; ascospores colorless, ellipsoid, ca. 8-per ascus, simple, 10 $\mu$ m x 3-4 $\mu$ m.

James C. Lendemer *et al.* #2920  
w/ Walter Bien, Ted Gordon, Bill Olson, Alfred E. Schuyler, & Bill Standaert

August 5, 2004

**179. *Cetrelia olivetorum* (Nylander) Culberson & C. Culberson**

Det. J.C. Lendemer – September 30, 2004

**UNITED STATES OF AMERICA. NEW YORK. ESSEX COUNTY.:** On twigs of a dead conifer, in a hardwood swamp with maple (*Acer*), elm (*Ulmus*), and sparse conifers, bordered by rocky outcrops, along Ausable River, west side of NY Route #21. – elev. 500 ft. – UTM 18 0585097E 4904975N - Lat. 44° 17' 35" N, Long. 73° 56' 00" W – Assoc. spp.: *Hypogymnia physodes*, *Parmelia squarrosa*, *Flavoparmelia caperata*, *Usnea merrillii*, *Usnea filipendula*.

Thallus corticolous, foliose, blue-gray, sorediate; medulla white, C+ red; underside black with brown margins; soralia marginal, small; pseudocyphellae small, inconspicuous.

James C. Lendemer *et al.* #3053

September 18, 2004

w/ participants of 2004 A. Leroy Andrews Foray

**180.** *Rimelia reticulata* (Taylor) Hale & Fletcher  
Det. J.C. Lendemer – October 12, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. BURLINGTON COUNTY.:** On the bark of an oak (*Quercus*), in a mixed pine (*Pinus*) – oak (*Quercus*) forest, along the east shore of the Batsto River, Batsto Natural Area, 0-1 mile north of Batsto, Wharton State Forest. – elev. 40-50 ft. - UTM 18 529994E 4389672N – Lat. 39° 39' 23"N, Long. 74° 39' 01"W – Assoc. spp.: *Flavoparmelia caperata*, *Lepraria* sp., *sterile sorediate crustose* sp., *Rimelia subisidiosa*, *Punctelia rudecta*, *Lecanora subpallens*, *Lecanora hybocarpa*, *Physcia millegrana*, *Rinodina maculans*.

Thallus corticolous, foliose, blue-gray, sorediate; cortex with a fine pattern of reticulate cracks; medulla white, KOH+ yellow turning red; underside black with brown margins; soralia marginal; soredia fine.

James C. Lendemer #3203

October 9, 2004

**181.** *Coenogonium pineti* (Acharius) ined.  
Det. J.C. Lendemer – October 18, 2004

**UNITED STATES OF AMERICA. NEW YORK. ESSEX COUNTY.:** On bryophytes and organic matter on a road bank, in a mixed northern hardwood forest (*Acer*, *Fraxinus*, *Juglans*, *Betula*) with low coniferous areas and shaded rock outcrops, northeast of Heart Lake, low east-facing slopes of Mt. Jo. – elev. 650-700 ft. – UTM 18 582927E 4893307N – Lat. 44° 11' 18" N, Long. 73° 57' 45" W – Assoc. spp.: *Cladonia fimbriata*, *Cladonia* sp.

Thallus muscicolous/lignicolous, crustose, thick, green-gray, esorediate; apothecia pale, margins smooth; epiphymenium colorless; hymenium colorless; hypothecium colorless; exciple colorless; ascospores 2-celled, colorless, 8-per ascus, obtuse-ellipsoid, 10-10.25µm x 4µm.

James C. Lendemer et al. #3062

September 17, 2004

w/ participants of 2004 A. Leroy Andrews Foray

**182.** *Lecanora* sp.  
Duplicate Det. (NY!) – R.C. Harris – December 24, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. BURLINGTON COUNTY.:** On the bark of a pitch pine (*Pinus rigida*), in a low, moist, mixed pine (*Pinus rigida*) – oak (*Quercus*) forest with many small depressions, grading into typical dry pine – oak barrens, just west of the shore of the Batsto River and east of the Mullica River, south of Batsto, Wharton State Forest. - elev. 0-10 ft. - UTM 18 529932E 4387968N – Lat. 39° 38' 28"N, Long. 74° 39' 04"W – Assoc. spp.: *Lecanora strobilina*, *sterile sorediate crustose* sp., *Cladonia* sp., *Pyrrhospora varians*.

Thallus corticolous, crustose, esorediate, areolate, white, UV-; areoles aggregated to dispersed, small; apothecial discs brown; margins white and often excluded; epiphymenium brown/orange; hymenium colorless; hypothecium colorless; exciple colorless; ascospores colorless, simple, ellipsoid, ca. 8-per ascus, (8-9)-10µm x 4µm.

James C. Lendemer #3259

October 17, 2004

**183.** *Pertusaria ophthalmiza* (Nylander) Nylander  
Det. J.C. Lendemer – October 27, 2004  
Duplicate Confirmed (NY!) – R.C. Harris – December 17, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. ALTANTIC COUNTY.:** On the bark of an oak (*Quercus*), Pleasant Mills Cemetery, west of Batsto, Batsto Natural Area, Wharton State Forest. – elev. ca. 10 ft. - UTM 18 529086E 4388055N – Lat. 39° 38' 30"N, Long. 74° 39' 40"W – Assoc. spp.: *Anisomeridium polypori*, *Julella fallaciosa*, *Flavoparmelia caperata*, *Punctelia rudecta*, *Pertusaria paratuberculifera*, *Lepraria lobificans*.

Thallus corticolous, crustose, thick, gray, esorediate, UV-; apothecia densely pruinose/sorediate; discs black/dark; asci immature; medulla & ascomata K-, C-, UV-, PD-.

James C. Lendemer #3316

October 17, 2004

**184. *Lepraria* aff. *incana* (L.) Acharius**

Det. J.C. Lendemer – October 27, 2004

Duplicate Confirmed (NY!) – R.C. Harris – December 17, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. ATLANTIC COUNTY.:** On the bark of an oak (*Quercus*), in a mixed pine (*Pinus rigida*) – oak (*Quercus*) forest with sparse birch (*Betula populifolia*) and maple (*Acer*), north of Pleasant Mills Cemetery, northwest of Batsto, east of Nesco, Wharton State Forest. – elev. 10-20 ft. - UTM 18 528796E 4388529N - Lat. 39° 38' 46"N, Long. 74° 39' 52" W – Assoc. spp.: *Cladonia* sp., *Flavoparmelia caperata*, *Punctelia rudecta*.

Thallus corticolous, crustose, blue-gray to greenish, poorly lobed, thick, UV + blue/white.

James C. Lendemer #3357

October 24, 2004

**185. *Lepraria* aff. *incana* (L.) Acharius**

Det. J.C. Lendemer – October 27, 2004

Duplicate Confirmed (NY!) – R.C. Harris – December 17, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. ATLANTIC COUNTY.:** On the bark of an oak (*Quercus*), in a mixed pine (*Pinus rigida*) – oak (*Quercus*) forest with sparse birch (*Betula populifolia*) and maple (*Acer*), north of Pleasant Mills Cemetery, northwest of Batsto, east of Nesco, Wharton State Forest. – elev. 10-20 ft. - UTM 18 528796E 4388529N - Lat. 39° 38' 46"N, Long. 74° 39' 52" W – Assoc. spp.: *Cladonia* sp., *Flavoparmelia caperata*, *Punctelia rudecta*.

Thallus corticolous, crustose, blue-gray to greenish, poorly lobed, thick, UV + blue/white.

James C. Lendemer #3358

October 24, 2004

**186. *Physcia americana* G. Merrill**

Det. J.C. Lendemer – October 27, 2004

Duplicate Confirmed (NY!) – R.C. Harris – December 17, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. BURLINGTON COUNTY.:** On the bark of an oak (*Quercus*), in an upland disturbed pine (*Pinus rigida*) – oak (*Quercus*) forest (oak dominant), on a flat upland area between the Mullica River and the Batsto River, just south of Batsto, Wharton State Forest. – elev. 10 ft. - UTM 18 529760E 4387974N – Lat. 39° 38' 28"N, Long. 74° 39' 12"W – Assoc. spp.: *Flavoparmelia caperata*, *Punctelia rudecta*, *Bacidia schweinitzii*, *Lepraria lobificans*, *Pertusaria paratuberculifera*, *Acrocordia megalospora*, *Phaeophyscia rubropulchra*.

Thallus corticolous, foliose, gray-blue, sorediate, UV-, lightly pruinose; soralia laminal; underside pale; medulla white.

James C. Lendemer #3367

October 24, 2004

**187. *Acrocordia megalospora* (Fink) R.C. Harris**

Det. J.C. Lendemer – October 27, 2004

Duplicate Confirmed (NY!) – R.C. Harris – December 17, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. BURLINGTON COUNTY.:** On the bark of an oak (*Quercus*), in an upland disturbed pine (*Pinus rigida*) – oak (*Quercus*) forest (oak dominant), on a flat upland area between the Mullica River and the Batsto River, just south of Batsto, Wharton State Forest. – elev. 10 ft. - UTM 18 529760E 4387974N – Lat. 39° 38' 28"N, Long. 74° 39' 12"W – Assoc. spp.: *Flavoparmelia caperata*, *Punctelia rudecta*, *Bacidia schweinitzii*, *Lepraria lobificans*, *Pertusaria paratuberculifera*, *Physcia americana*, *Phaeophyscia rubropulchra*.

Thallus corticolous, crustose, immersed, UV-; perithecia large, ca. ½ to ¾ immersed in substrate, black, with a somewhat raised ostiole; ascospores colorless, 2-celled, obtuse-ellipsoid, tapering to pointed ends, ca. 8-per ascus, uniseriate, 36-40µm x 15-20µm.

James C. Lendemer #3371

October 24, 2004

**188. *Pertusaria trachythallina* Erichsen**

Det. J.C. Lendemer – November 4, 2004

Duplicate Confirmed (NY!) – R.C. Harris – December 17, 2004

**UNITED STATES OF AMERICA. NEW YORK. ESSEX COUNTY.:** On fallen branches, in a hardwood swamp with maple (*Acer*), elm (*Ulmus*), and sparse conifers, bordered by rocky outcrops, along Ausable River, west side of NY Route #21. – elev. 500 ft. – UTM 18 0585097E 4904975N - Lat. 44° 17' 35" N, Long. 73° 56' 00" W – Assoc. spp.: *Hypogymnia physodes*, *Parmelia squarrosa*, *Flavoparmelia caperata*, *Usnea merrillii*, *Usnea filipendula*, *Cetrelia olivetorum*, *Buellia stillingiana*.

Thallus corticolous, crustose, thick, gray, esorediate, UV-; ascomata discoid, discs densely pruinose, UV-, C-, PD+ yellow/orange.

James C. Lendemer *et al.* #3116

September 18, 2004

w/ participants of 2004 A. Leroy Andrews Foray

**189. *Catinaria atropurpurea* (Schrader) Vězda & Poelt**

Det. J.C. Lendemer – November 9, 2004

Duplicate Confirmed (NY!) – R.C. Harris – December 17, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. BURLINGTON COUNTY.:** On the bark of a red maple (*Acer rubrum*), in an open oak (*Quercus*) dominated pine (*Pinus rigida*) – oak forest, on a gentle hillside grading into a swampy mixture of Atlantic white cedar (*Chamaecyparis*) – red maple (*Acer rubrum*) on the east shore of the Batsto River, just south of Batsto, Wharton State Forest. – elev. 0-10 ft. - UTM 18 530059E 4388055N – Lat. 39° 38' 30"N, Long. 74° 38' 59"W. – Assoc. spp.: *Flavoparmelia caperata*, *Punctelia rudecta*, *Physcia millegrana*, *sterile sorediate crust*, *Parmelinopsis minarum*.

Thallus corticolous, crustose, thin, green, dispersed to well developed, esorediate; apothecia dark brown; margins excluded as disc becomes convex; epihymenium brown; pigment KOH+ darker brown; hymenium colorless; hypothecium brown, KOH-; exciple colorless, KOH-; ascospores colorless, 2-celled, obtuse-ellipsoid, ca. 8-per ascus, 14µm x 6-6.5µm.

James C. Lendemer #3486

November 6, 2004

**190. *Punctelia missouriensis* Wilhelm & Ladd**

Det. J.C. Lendemer – November 28, 2004

Duplicate Confirmed (NY!) – Richard C. Harris – January 4, 2004

**UNITED STATES OF AMERICA. MARYLAND. CECIL COUNTY.:** On the base of an old oak (*Quercus*), on the overgrown margins of the older portions of West Noddingham Presbyterian Cemetery, West Nottingham Presbyterian Church, West Noddingham. – elev. ca. 340 ft. - UTM 18 407687E 4391813N – Lat. 39° 40' 16"N, Long. 76° 04' 35"W – Assoc. spp.: *Flavoparmelia caperata*, *Lepraria sp.*, *Physcia millegrana*.

Thallus corticolous, foliose, blue-gray, pseudocyphellate, isidio-sorediate; medulla white, C+ red; lobes broad as in *P. rudecta* (Acharius) Krog; soralia laminal and marginal, with few soredia; soredia weakly corticate, inflated and isidioid-pustulose, with age nearly covering the thallus surface; underside pale; margins epruinose, blue-gray or slightly browned.

James C. Lendemer #3551 & Ethel W. McCardell

November 28, 2004

**191. *Punctelia rudecta* (Acharius) Krog**

Det. J.C. Lendemer – November 28, 2004

Duplicate Confirmed (NY!) – Richard C. Harris – January 4, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. BURLINGTON COUNTY.:** On the bark of an oak (*Quercus*), in an oak (*Quercus*) dominated, moist, pine (*Pinus rigida*) – oak forest, with many small sunny openings and sparse ericaceous understory, along the west shore of the Skit Branch of the Batsto River, south of unnamed paved road, north of Carranza Memorial, north of Friendship, ca. 2.5 miles northeast of Hampton Furnace, Wharton State Forest. – elev. 40-50 ft. – UTM 18 529168E 4404058N - Lat. 39° 47' 10"N, Long. 74° 39' 34"W – Assoc. spp.: *Flavoparmelia caperata*, *Lepraria incana*, *Lecanora strobilina*, *Cladonia sp.*

Thallus corticolous, foliose, blue-gray, esorediate, isidiate, loosely adnate, pseudocyphellate; medulla white, C+ red; lobes broad; isidia laminal, cylindrical, tall, branched, brown tipped; underside pale; margins epruinose, blue-gray.

James C. Lendemer #3549 & Richard F. Lendemer

November 13, 2004

**192. *Micarea melaena* (Nylander) Hedlund**  
Det. J.C. Lendemer – November 28, 2004

**UNITED STATES OF AMERICA. NEW JERSEY. BURLINGTON COUNTY.:** On a rotting pine log, in a dense, upland mixed pine (*Pinus rigida*) – oak (*Quercus*) forest, along the west shore of Batsto River, 0-1/4 mile north of Hampton Furnace, east of Atsion, Wharton State Forest. – elev. 0-10 ft. - UTM 18 527217E 4402575N – Lat. 39° 46' 22"N, Long. 74° 40' 56"W – Assoc. spp.: *Imshaugia aleurites*, *Cladonia macilenta*, *Cladonia grayi*, *Lecanora* sp.

Thallus lignicolous, crustose, thin to thick, green, esorediate, verruculose; apothecia black, hemispherical, often deformed; epihymenium blue-green, KOH-; hymenium with blue-green pigment in upper portions and purple-brown pigment in lower portions; hypothecium purple-brown, KOH+ purplish diffusing pink into the surrounding mount; exciple brown to brown-purple; ascospores 8-per ascus, colorless, (0)-(2)-4 celled, fusiform or tapering to one end, 17-19 $\mu$ m x 5-6 $\mu$ m.

James C. Lendemer #3550 & Richard F. Lendemer

November 13, 2004

**193. *Usnea filipendula* Stirton**  
Det. J.C. Lendemer – December 7, 2004

**UNITED STATES OF AMERICA. NEW YORK. ESSEX COUNTY.:** On twigs and branches of dead conifers, in a hardwood swamp with maple (*Acer*), elm (*Ulmus*), and sparse conifers, bordered by rocky outcrops, along Ausable River, west side of NY Route #21. – elev. 500 ft. – UTM 18 0585097E 4904975N - Lat. 44° 17' 35" N, Long. 73° 56' 00" W – Assoc. spp.: *Hypogymnia physodes*, *Parmelia squarrosa*, *Flavoparmelia caperata*, *Usnea subfloridana*, *Pertusaria trachythallina*, *Pertusaria amara*, *Lecanora thysanophora*, *Buellia stillingiana*, *Lecanora pulicaris*, *Lecanora symmicta*, sterile sorediate crust.

Thallus corticolous, fruticose, isidiate, dull green to light green, lax to somewhat stiff; branches not distinctly inflated, occasionally with slight ridges near point of attachment of fibrils, epruinose; tips curling and fragile; papillae sparse to abundant, tall, cylindrical; fibrils regular, not articulated, not inflated, tapering; occasional soralia arising from cortex where papillae are broken, often with one or few isidioid-incipient fibrils. All thalli TLC: usnic acid, salazinic acid, consalazinic acid.

Note that there is confusion surrounding *U. filipendula* and other supposedly similar taxa (especially *U. diplotypus* Vainio). I have not seen the type material of either *U. filipendula* or *U. diplotypus*. The differences cited by Brodo et al (2001) seem rather ambiguous. One must admit that sterile elongate *Usnea* species are poorly understood and much work remains to be done at the species level. While Brodo et al. (2001) do not note a chemical difference between the above two species, Halonen et al. (1998) state that *U. diplotypus* often produces barbatic acid in addition to usnic and salazinic acids. Assuming all of the material distributed under this number represents *U. filipendula*, the species is rather variable especially in aspects of thallus color, basal color, and abundance of soralia/isidia/fibrils. Presently I am relying on the coarse cortex with raised cylindrical papillae (especially towards the base), curled branch tips, lack of foveae, ridges, or inflated branches, chemistry, and darkened basal portions (especially older broken branches) to identify the species.

James C. Lendemer et al. #3553  
w/ participants of 2004 A. Leroy Andrews Foray

September 18, 2004

**194. *Pertusaria texana* Müll. Arg.**  
Det. J.C. Lendemer – January 28, 2005

**UNITED STATES OF AMERICA. NORTH CAROLINA. PENDER COUNTY.:** On the branches of *Amelanchier*, in a *Pinus palustris* - *Quercus laevis* dominated sand scrub, just east of Shaw Highway (SR #1523), at intersection with Lodge Road, 5.3 miles south of NC #53, Holly Shelter Game Land. – elev. 10 ft. - UTM 18 242028E 3826949N – Lat. 34° 33' 07"N, Long. 77° 48' 41"W – Assoc. spp.: *Rimelia subisidiosa*,

*Graphis lucifera*, *Gyalideopsis* spp., *Buellia stillingiana*, *Parmotrema hypotropum*, *Parmotrema perforatum*, *Pyrrhospora russula*.

Thallus corticolous, crustose, thick, yellow-gray, esorediate, UV+ orange, KOH+ yellow; ascomata wart-like, not compound; ostiole raised, yellow; ascospores 4-8-per ascus, colorless, obtuse-ellipsoid, 58-64 $\mu$ m x 28-32 $\mu$ m.

James C. Lendemer #3726 & Erin Tripp

December 13, 2004

**195. *Parmotrema xanthinum* (Müll. Arg.) Hale**

Det. J.C. Lendemer – January 28, 2005

**UNITED STATES OF AMERICA. NORTH CAROLINA. PENDER COUNTY.:** On the base of an oak (*Quercus*), in a *Pinus palustris* - *Quercus laevis* dominated sand scrub, just east of Shaw Highway (SR #1523), at intersection with Lodge Road, 5.3 miles south of NC #53, Holly Shelter Game Land. – elev. 10 ft. - UTM 18 242028E 3826949N – Lat. 34° 33' 07"N, Long. 77° 48' 41"W – Assoc. spp.: *Buellia stillingiana*, *Parmotrema tinctorum*, *Parmotrema rampoddense*, *Rimelia subisidiosa*, *Rimelia reticulata*, *Usnea pensylvanica*, *Usnea mutabilis*, *Usnea strigosa*-group, *Lecanora hybocarpa*, *Lecanora louisianae*. *Lecanora strobilina*, *Arthonia* sp.

Thallus corticolous, foliose, esorediate, isidiate, green; cortex UV-; medulla white, UV, C-; underside black with brown margins; lobes broad; marginal cilia present; isidia cylindrical, laminal.

James C. Lendemer #3727 & Erin Tripp

December 13, 2004

**196. *Chrysotrichia flavovirens* Tønsberg s. lat.**

Det. J.C. Lendemer – January 28, 2005

**UNITED STATES OF AMERICA. NORTH CAROLINA. CRAVEN COUNTY.:** On the bark of a pitch pine (*Pinus rigida*), rich upland mixed forest with *Quercus* spp., *Ilex opaca*, *Acer rubrum*, *Fraxinus americanum*, and a system of lowland *Acer* swamps, north of Flanners Beach Road, west of Flanners Beach Campground, west of SR #70, north of Havelock, Croatan National Forest. – elev. 10-30 ft. – UTM 18 321856E 3872750N – Lat. 34° 58' 54"N, Long. 76° 57' 06"W - Assoc. spp.: *Lepraria* sp., *Rimelia subisidiosa*.

Thallus corticolous, crustose, thin, yellow-green (dull). The collection is referred to *C. flavovirens* s. lat. because, as noted by Harris & Lendemer (2005) North American material lacks diffractaic acid.

James C. Lendemer #3728 & Erin Tripp

December 13, 2004

**197. *Phlyctis ludoviciensis* (Müll. Arg.) Lendemer *comb. nov.*<sup>2</sup>**

Det. J.C. Lendemer – February 15, 2005

**UNITED STATES OF AMERICA. NORTH CAROLINA. CRAVEN COUNTY.:** On the bark of small trees in a wet, *Nyssa* dominated pocosin with a *Lyonia* understory, along the east shore of Catfish Lake, along Forest Service Road #158, ca. ½ mile north of intersection with Catfish Lake Road, Croatan National Forest. – elev. ca. 10 ft. – UTM 308416E 3867809 – Lat. 34° 56' 11"N, Long. 71° 05' 52"W - Assoc. spp.: *Haematomma* sp., *Opegrapha* spp., *Brigantiae leucoxantha*, *Pseudosagedia cestrense*, *Buellia stillingiana*, *Arthonia* sp., *Arthothelium interveniens*.

Thallus corticolous, crustose, thin to thick, blue-gray, smooth to verruculose, with poorly defined white prothallus; ascomata semi-immersed, covered with thalline granules.

James C. Lendemer #1051 & Rebecca Yahr

July 4, 2003

**198. *Phlyctis argena* (Sprengel) Flotow**

Det. J.C. Lendemer – February 26, 2005

**UNITED STATES OF AMERICA. NEW YORK. ESSEX COUNTY.:** On the bark of small red maples (*Acer rubrum*), mixed hardwood forest (*Acer*, *Juglans*, *Betula*) with a small maple (*Acer rubrum*) swamp, low portions of drainage for Holcomb Pond into Ausable River, along NY Route #21. – elev. 500 ft. – UTM 18 585231E 4904273N – Lat. 44° 17' 12" N, Long. 73° 55' 54" W – Assoc. spp.: *sterile sorediate* sp., *Rinodina subminuta*, *Rinodina* sp., *Lepraria lobificans*, *Flavoparmelia caperata*, *Arthonia* sp., *Parmelia squarrosa*.

Thallus corticolous, crustose, thick, verruculose, blue-gray, sorediate, KOH+ yellow turning red (norstictic acid crystals in squash); soredia coarse, granular, poorly developed; ascomata abundant, margins torn and ragged; ascospores 1-per ascus, hyaline to light brown, muriform, obtuse-ellipsoid, ca. 120 x 38 $\mu$ m.

James C. Lendemer *et al.* #2988  
w/ participants of 2004 A. Leroy Andrews Foray

September 18, 2004

**199. *Bacidia schweinitzii* (Fries ex Michener) A. Schneider**  
Det. J.C. Lendemer – February 27, 2005

**UNITED STATES OF AMERICA. NEW YORK. ESSEX COUNTY.:** On the bark of maples (*Acer*), in a hardwood swamp with maple (*Acer*), elm (*Ulmus*), and sparse conifers, bordered by rocky outcrops, along Ausable River, west side of NY Route #21. – elev. 500 ft. – UTM 18 0585097E 4904975N - Lat. 44° 17' 35" N, Long. 73° 56' 00" W – Assoc. spp.: *Lecanora thysanophora*, *Lecanora rugosella*, *Pertusaria amara*, *Pertusaria trachythallina*, *Parmelia squarrosa*, *Parmelia sulcata*, *Hypogymnia physodes*, *Flavoparmelia caperata*.

Thallus corticolous, crustose, thin to thick, granulose to subsquamulose, brownish-green; apothecia black, plane; margins persisting; epiphymenium blue-green, KOH-; hymenium colorless, KOH-; hypothecium brown, KOH-; exciple brown, KOH± purplish; ascospores colorless, tapering, ca. 8-per ascus, transversely septate, 56-60 x 2.5-3 $\mu$ m.

James C. Lendemer *et al.* #3778  
w/ participants of 2004 A. Leroy Andrews Foray

September 18, 2004

**200. *Usnea strigosa* (Acharius) A. Eaton**  
Det. J.C. Lendemer – February 27, 2005

**UNITED STATES OF AMERICA. NORTH CAROLINA. PENDER COUNTY.:** On the branches an oak (*Quercus*), in a *Pinus palustris* - *Quercus laevis* dominated sand scrub, just east of Shaw Highway (SR #1523), at intersection with Lodge Road, 5.3 miles south of NC #53, Holly Shelter Game Land. – elev. 10 ft. - UTM 18 242028E 3826949N – Lat. 34° 33' 07"N, Long. 77° 48' 41"W – Assoc. spp.: *Buellia stillingiana*, *Lecanora louisianae*, *Lecanora hybocarpa*, *Lecanora strobilina*, *Piccolea conspersa*, *Usnea pensylvanica*, *Usnea mutabilis*, *Usnea subscabrosa*, *Parmotrema submarginale*, *Parmotrema perforatum*, *Parmotrema tinctorum*, *Rimelia reticulata*, *Rimelia subisidiosa*.

Thallus corticolous, fruticose, pale yellow-green, esorediate; cortex thick; medulla pigmented red, lax; axis opaque; papillae abundant; fibrils irregular, short, poorly articulated, not inflated or deformed; apothecial cilia not inflated or deformed; discs pruinose.

James C. Lendemer #3779 & Erin Tripp

December 13, 2004

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## ENDNOTES

### 1. *Lepraria caesiella* R.C. Harris sp. nov.

*Lepraria externe similis L. incanae* (L.) Acharius sed atranorin et zeorin continens.

TYPE: UNITED STATES OF AMERICA. PENNSYLVANIA. MONROE COUNTY.: On a large dead birch (*Betula*), Community Drive Wetlands, drained portions boarded by *Alnus*, and swampy portions primarily with *Acer* and *Fraxinus*, bisected by Hogback Ridge forested with dense hemlocks (*Tsuga*) and large semi-calcareous rock exposures and boulders, ca. 1 mile southeast of Shoemakers, ca. 2 miles south of Bushkill, Delaware Water Gap National Recreation Area. – elev. ca. 700-800 ft. - Lat. 41° 04' 43"N, Long. 75° 00' 24"W. - 24.April.2004 - J.C. Lendemer 2304 & R.C. Harris et al. (NY!, holotype; isotypes distributed as *Lichens of Eastern North America Exsiccati*, no. 172).

Thallus pale bluish gray (fades to white in herbarium), poorly delimited, consisting of loosely to densely packed soredia/consoredia without medulla and prothallus, initially of scattered soredia/consoredia, then forming small patches which fuse to form extensive, irregular, ± continuous thalli, rather thin, 0.1-0.2 mm thick, containing atranorin and zeorin. Soredia 20-30 µm in diameter, filled with small crystals, with short, irregular, projecting hyphae, 25-30 µm long. Consoredia to 100 µm in diameter.

*Lepraria caesiella* is widely distributed east of the prairies from northern Alabama and central Mississippi to southern Canada in shaded woods on deciduous trees and conifers, rarely on rock and once on lignum. In old herbarium specimens and older American literature this species was most commonly identified as *Lepraria incana* (incl. *L. aeruginosa* auct.), which contains divaricatic acid and zeorin (Laundon, 1992). Harris (1977) recognized it as distinct (as *Lepraria* sp. 3). It has languished since then for almost 30 years without a name. Its belated description results from a recent large collection by James Lendemer to serve as type.

*Lepraria caesiella* is recognized by (and named for) its distinctive pale blue gray color. It is further characterized by its thin thallus lacking medulla and prothallus and by the presence of atranorin and zeorin. Another unnamed? *Lepraria* with atranorin and zeorin which is morphologically rather similar to *Lepraria rigidula* (de Lesd.) Tønsberg differs in having additionally a fatty acid and a distinct medulla. An unnamed soraliate *Lecanora*? with atranorin and zeorin may become granular leprose centrally but one can usually find non-leprose areas with distinct soralia to distinguish it from *L. caesiella*.

*Lepraria caesiella* is probably the third or fourth most common *Lepraria* in eastern North America north of the southern Coastal Plain. Of the 130 collections for which I have the host tree recorded it occurs on 23 different species, 43% on conifers (preferentially *Pinus* and *Tsuga*), 57% on deciduous trees (preferentially *Quercus*). Also there are five collections from rock and one on lignum.

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Figure 1. *Lepraria caesiella* R.C. Harris, Lendemer 2304 (NY), holotype.



**2. *Phlyctis ludoviciensis* (Müll. Arg.) Lendemer *comb. nov.***

*Phlyctidia ludoviciensis* Müll. Arg., Hedwigia 34: 141. 1895. TYPE: USA. LOUISIANA. St. Martinsville, on *Planera* [= *Carya*] *aquatica*; 4.June.1894; A.B. Langlois 830 (PH!, isotype).

The genus *Phlyctidia* Müll. Arg., is presently considered a synonym of *Phlyctis* (Wallroth) Flotow and most of the names placed in *Phlyctidia* by Müller (1895) have returned to *Phlyctis*. *Phlyctis ludoviciensis* however, remained in *Phlyctidia* (Esslinger, 1997) and is transferred to *Phlyctis* here. The species is common in the southeastern United States and is easily recognized by the thick blue-gray thallus, presence of psoromic acid, *Phlyctis*-type ascomata (buried in the thallus and covered with thalline granules), and large muriform ascospores.

1. "Contribution of *RPB2* to multilocus phylogenetic studies of the euascomycetes (Pezizomycotina, Fungi) with special emphasis on the lichen-forming Acarosporaceae and evolution of polyspory" by Valerie Reeb, Francois Lutzoni and Claude Roux. *Molecular Phylogenetics and Evolution*, 32(3): 1036-1060. 2004.

The real core of this paper is an excellent study of Acarosporaceae and the evolution of polyspory within the Ascomycota. For better resolution, the three locus study uses the protein-coding gene *RPB2* with the traditional ribosomal genes SSU and LSU and a robust sample of 89 taxa including twenty-five taxa of polyspored Acarosporaceae sensu auct. The analysis is meticulous and does not attempt to avoid problems like the less than 100-spored *Acarospora megaspora* and *Glypholecia scabra*. The results are well-supported.

Polysporous species were not found to form a monophyletic group. The hypothesis that polyspory arose only once in the evolution of the lichenized ascomycetes, which led to the placing of all polysporous species in Acarosporaceae, is rejected. The actual times polyspory arose and the placement of these events is not resolved and needs further study.

Building on a number of studies, the authors recognize the family Acarosporaceae forms an independent lineage outside the core Lecanoromycetidae. The subclass Acarosporomycetidae is formally recognized which places the lineage in equal rank with the other three major lineages of the Lecanoromycetes. The deeper relations between these four major lineages needs further study.

The subclass Acarosporomycetidae contains a single family Acarosporaceae which includes in a new circumscription *Acarospora*, *Glypholecia*, *Pleopsidium*, *Polysporina*, *Sarcogyne*, and *Thelocarpell a* and excludes *Biatoridium*, *Maronea*, *Sarcoasgium*, *Sporastatia*, *Strangospora*, and *Thelocarpon*. It should be noted that the genera *Ahlesia*, *Biatorella*, *Lithoglypha*, *Maronella*, *Melanophloea*, and *Timdalia* could not be included in the three gene study because of a lack of material. The current placement of these genera is not addressed but they are left out of the formal circumscription.

The inclusion of *Pleopsidium* is particularly satisfying because its placement in *Lecanoraceae* seemed forced and based on an over-stressing of the characters that were used to differentiate the genus from *Acarospora*. A paper on *Pleopsidium* is currently being written by Valerie Reeb, the primary author.

At this point in their studies the authors cannot make any conclusions about the relations of the species within Acarosporaceae but neither *Acarospora* or *Sarcogyne* is found to be monophyletic. The authors mention in aside that *Sarcogyne* might be a subgenus and their phylogram shows that the genus *Sarcogyne* was split from *Acarospora* based on a false taxonomic analysis.

The only flaw in an excellent paper is Section 4.4 where the subclass Ostromycetidae and the class Lichinomycetes are formally recognized. While there is support for Ostromycetidae in the current three gene study, the recognition of the class Lichinomycetes should definitely have been given the intellectual dignity of its own paper. Nonetheless, the class can be justified based on the work of many others including the authors of the present study and the classification is the logical development of both phylogenetic analyses and morphological studies which increasing have proven the Lichinales are a lineage separate from Lecanoromycetes and several genera of the Lichinales confirm the results of this study that polyspory did not arise once in the evolution of lichenized fungi.

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## Literature Review

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2. A Monograph of *Enterographa* and *Sclerophyton*. By Laurens B. Sparrius. *Bibliotheca Lichenologica*, 89. pp141. 2004. Berlin, Stuttgart: J. Cramer.

Laurens B. Sparrius of the Netherlands has produced an important work in English that is the best example of what a monograph should be. Strictly as a monograph it is well-organized, lucid and concise. The keys are clean and efficient. The accompanying 51 black-and-white photographs are invaluable because many species have definite photogenic gestalts and ascocarps patterns as interesting as pictographs. For any one considering producing a monograph, one could not pick a better modern example.

These same qualities make the work not only indispensable but accessible to those who are not specialists in Arthoniales. The monograph can be easily used and supersedes any sections on these genera in modern floras. It also includes an explanation on how to place the new keys within the structure of Grube's key to Arthoniales in *Bryologist* 101:377-391.

*Enterographa* now contains 14 species, with only six species being wide spread. Eight new species are described. I found particularly interesting Sparrius' confirmation of a disjunct collection by Richard Harris of *E. hutchinsiae* (Leighton) A. Massalongo in Arkansas in the Ozark National Forest.

*Sclerophyton* is redefined in relation to *Enterographa*. Building on the insight of Richard Harris, the genus is no longer distinguished from *Enterographa* by spores that turn brown at maturity and are constricted at septa. This has an immediate impact on lichen keys in English. The genus is expanded to include fourteen species and nine new species are named. As with *Enterographa*, there is a high rate of endemism.

Very few species of either genus occur in the continental United States and almost exclusively in Florida and Louisiana.

The rest of the monograph covers species being transferred to other genera. *Sclerophytomyces* is resurrected as a genus in a display of logic using the Code which is worth appreciating. Three *Dirina* are treated including a new species from Australia. Of importance to users of Vol. 1 of the Sonoran flora and those interested in the flora of California is the transfer of *Sclerophyton californica* Tuckerman and *S. cerebriformis* Egea & Torrente to *Llimonaea*.

The monograph ends with excluded and doubtful taxa, a necessary duty that Sparrius does not neglect.

The explanation and drawings of spores and spore ontogeny and conidia throughout the monograph are invaluable.

Like all publications in *Bibliotheca Lichenologica* it is outrageously over-priced but is well worth the investment if one is dealing with Arthoniales, tropical floras or is in an area where the genera occur and your local university or herbarium does not have a copy.

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# *Opuscula Philolichenum*

Volume No. 2, 2005

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